

Designing the new MAN Long-haul Ethernet, packet rings and optical switches enable service providers to break the metropolitan-area net bottleneck. **PAGE 48.**

NetworkWorld

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November 5, 2001 ■ Volume 18, Number 45

Chapter 11 isn't always the end

■ BY MICHAEL MARTIN

Banfield Pet Hospitals had planned to rely heavily on DSL for a major network overhaul originally scheduled for completion in July. But when it became apparent that prospective service provider Rhythms NetConnections was struggling financially and possibly headed for Chapter 11 bankruptcy protection, Banfield instead chose frame relay connections from another carrier even though they cost four times as much.

"Running mission-critical applications over a network that could disappear in 30 days is not a good plan," says Lance Harris, Banfield's director of IT operations.

Harris had the foresight and good fortune not to get stuck with a vendor that wound up filing for Chapter 11 — something that the thousands of customers of bankrupt network product and service vendors now wish they could claim.

But is Chapter 11 really the end of the road for the dozens of ven-



dors that have filed for bankruptcy protection this year?

Not exactly, although experts say few will re-emerge looking just like their old selves. Most will be acquired in whole or in parts.

See Bankruptcy, page 16

Cisco's big bet

IP telephony push appears to be paying off.

■ BY PHIL HOCHMUTH

A fresh batch of Cisco IP telephony products has some observers saying Cisco has "arrived" as a big-enterprise phone system vendor, while others still complain that the company's voice-over-IP vision remains fuzzy and too dependent on proprietary technology.

"What this indicates is a maturing of Cisco's [voice-over-IP] product line," says David Passmore, research director for The Burton Group. "Arguably, the early adopter-only state for these products is over."

The 12 new hardware and software products announced last

week could help Cisco IP telephony customers make enterprise voice-over-IP applications more stable, secure and compatible with legacy telephone equipment and network protocols. Cisco has also added Enhanced 911 (E911) capabilities that make it easier for firefighters and police officers to respond to a call from a Cisco IP telephone.

On the hardware front, Cisco introduced survivable remote site telephony (SRST) support for Cisco 7200 series routers. This could let a large enterprise branch office or regional campus connected to a remotely located Cisco CallManager IP PBX server continue phone service if a WAN lifeline to a CallManager

See Cisco, page 69



More online!

- Read how the Cisco 7200 can become a branch-office PBX in a pinch.
- Also, read about Cisco's ramp-up of carrier VoIP research and development. **DocFinder: 6749**

MPLS facing slow adoption, despite flurry of market hype

■ BY JIM DUFFY

Backers of Multi-protocol Label Switching have hailed the technology over the past five years as a key enabler of Internet scalability and a harbinger of new services, such as advanced IP VPNs. MPLS makes IP as reliable, predictable and navigable as ATM and frame relay, they say.

Despite the promise, cost-conscious service providers have been cautious about embracing

IP's silver bullet?

First in a three-part series.

the technology for fear of cannibalizing their bread-and-butter services.

"There's definitely the Release 1.0 problem," says Mark Tharby, a vice president at Nortel, which has plans to support MPLS across its equipment line. "It's never a good idea to aggressively [embrace] a 1.0 release of any kind of new architecture."

While MPLS has received strong

support from carriers such as AT&T and Equant, observers say its success may hinge on its adoption by the regional Bell operating companies because the balance of power in the telecom industry is shifting toward them.

To date, the Bells are largely at the trial stage with MPLS.

MPLS has its roots in Ipsilon's IP Switching, Cisco's Tag Switching, IBM's ARIS technology and a few other proposals to bring the sort of traffic engineering found in connection-oriented ATM and frame relay networks to

See MPLS, page 14

■ Users test the wireless CRM waters. **PAGE 18.**

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*Based on customer estimates consolidating Windows NT servers using PC Hellink. **Based on comparable 2- to 8-way, 750MHz configurations as of 9/4/01 and 10/16/01. (Dell). Equivalent configurations of all Dell, HP and IBM servers include the cost of NAS storage. All configurations include the cost of Windows (Datacenter). ©2001 Sun Microsystems, Inc. All rights reserved. Sun, Sun Microsystems, the Sun logo, Sun Fire and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the United States and other countries. Products bearing SPARC trademarks are based on an architecture developed by Sun Microsystems, Inc. UNIX is a registered trademark in the United States and other countries, exclusively licensed through X/Open Company, Ltd.

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How to choose a MAN service provider

It's more than just cost. You need to think about length of contract, service-level agreements, add-on features, ability to change bandwidth requirements on the fly, and much more. **Page 52.**

Feature: .Net

Microsoft has been touting its .Net strategy for more than a year, but now the company is poised to deliver its first major .Net product — Visual Studio.Net. Here's what you need to know. **Page 53.**

ISP Report

Is your ISP among the front-runners or also-rans? **Page 54.**

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Interactive

Teleworking Tips

Check out Net.Worker's featured review this month of the book "101 Tips for Teleworkers." And browse through our extensive list of books available through Amazon.com on a variety of subjects from virtual teams to ergonomically sound office furniture. **DocFinder: 6739**

Forums

Short-term certification

Benefits? Read what others have to say about Sandra Gittlen's recent column on NetSmart and add your own comments. **DocFinder: 6740**

The debate goes on

You've heard all the talk about Windows XP. Now add your opinion to the still-heated online debate. **DocFinder: 6741**

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Videoconferencing resources

Will cutbacks in air travel lead to utilization of videoconferencing for corporate training, tech conferences and virtual trade shows? Find out more with our new research page. **DocFinder: 6742**

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Compendium

A real mother, um er 'Mummy' of an idea
Fusion Executive Editor Adam Gaffin links us to a view of the world's best ATM, disses a company that claims an antispam group is killing people, and brings you other news of the weird.
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Protecting your server
A reader asks, "Can you explain what a 'honey pot' is and give me an idea of what we should look for in intrusion-detection software?" Read Ron Nutter's explanation and advice.
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Keeping Current

Breaking down biometrics
Fusion Columnist Fred McClimans gets in your face with a discussion of the basics of a pattern-recognition tool called biometrics.
DocFinder: 6745

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New Bits

IBM has coming out party for eLiza

■ After six months of touting its eLiza Project, IBM last week debuted services and software underpinnings based on eLiza's promise of self-healing, self-managed systems aimed at large enterprise users. Observers say IBM's eLiza Project-related services will be an attractive offering to users with IBM gear and equipment from vendors cooperating with IBM. That's because it will give them a way to centralize and automate a lot of the management tasks they now spend time and money manually coordinating and performing. With the likes of Cisco and Nortel onboard, users with gear from those companies and eLiza tools would have a single management interface from which to maintain and monitor those products. One potential problem for IBM and eLiza is that it doesn't have the support of some major software and hardware vendors — such as Hewlett-Packard, Sun, Compaq, Dell or Microsoft.

Broadband more available . . . and ignored

■ Three out of four U.S. homes will be able to receive Internet access from cable modems or DSL service by year-end, according to a study released last week by The Yankee Group.

However, broadband availability is one thing and broadband use is another. Even though three-quarters of homes will be able to get broadband, only about 4% to 7% of customers actually sign up for the service as soon as it's available, The Yankee Group says. Cable Internet customer numbers dwarf those of all other broadband services — twice as many consumers use cable modems as DSL.

VA Linux to erase Linux from its name

■ First it dumped Linux-based hardware from its sales channel, and now VA Linux Systems is asking shareholders to boot the open-source operating system from its corporate identity. The Fremont, Calif., software and services company will ask shareholders to vote to change the company's name from VA Linux Systems to VA Software at its annual meeting on Dec. 5, according to a notice filed with the Securities and Exchange Commission. VA Linux said in June it would exit the hardware business, a market that was the center of its operations from the start and responsible for its stellar IPO in 1999.

Antipiracy feature in Windows XP cracked

■ A controversial antipiracy technology built into Microsoft's Windows XP has been cracked, a U.K. security firm reports. Within hours of the operating system's glitzy launch Oct. 25, coders in Asia began distributing software over the Internet that lets users bypass Microsoft's Product Activation technology, which is designed to prevent users from installing a copy of XP on multiple computers, according to BitArts Lab, a U.K. digital rights management firm.

The Microsoft technology requires all users to "activate" their copies of XP soon after they purchase them. This process "locks" a product identification number assigned to each copy of XP to the PC on which it is installed, and then issues an activation code based on that configuration. Microsoft said it was aware of the apparent code break, adding that it was not surprised crackers were looking for ways to get around its technology.

Akamai closes office, de-emphasizes live streaming

■ Akamai Technologies is closing its San Diego office and says it will focus on enterprise streaming services rather than on costly live-event streaming. During its earnings call in October, Akamai announced it was cutting its staff by about 25%. Analysts say those cuts will come largely from Akamai's San Diego office, where its streaming operations are headquartered. "It's true that the live-event streaming business has many high costs, such as signal acquisition, production and encoding, and is people-intensive," Akamai says. The company says it is focusing its streaming efforts on the enterprise market, which has proved to be more profitable, and has streaming customers such as Schwab, John Hancock, Unisys and SAP.

■ The Good The Bad The Ugly



New York last week initiated a statewide ban on simultaneously driving and using a handheld cell phone, with the threat of \$100 fines for offenders. Now if New York legislators can only do something about those taxi drivers . . . ➤



Microsoft's free Hotmail service has long been a once-in-a-blue-moon backup for corporate e-mail users. Now those accounts will have to be used more often or not at all because Microsoft is pulling the plug on mailboxes that go inactive for 30 days.



The World Trade Organization warned members of its mailing last week that they may be getting directed by search engines to a subtle parody of the WTO Web site. A WTO spokesman said the parody site has been harvesting e-mail addresses of visitors without their permission, which could enable it to send visitors information purporting to be from the WTO.



MIKE KEEFE

Palm resorts to price cut on top model

■ Struggling handheld maker Palm last week cut the price of its top model for the first time, marking down the m505 by \$50, from \$450 to \$400.

The price cut is the latest in a long series of cuts by Palm and competing Palm OS device maker Handspring in a battle to sell handheld devices in an ailing economy. Palm stock prices have been running near the bottom of its 52-week low price for months.

The share price has slid from a high of about \$67 a year ago to a low of \$1.35. Late last week it was at \$2.38.

The company has been hit hard by the slowdown in handheld purchases since the Sept. 11 terrorist attacks and by increasing competition from other brands based on the resurgent Microsoft PocketPC software.

Correction

■ A "Short Takes" item in the Service Provider section (Oct. 29, page 31) should have identified the organization that has signed a three-year contract to use AT&T's Integrated Network Connection Service as Edison Schools, Inc.

"Nokia led the parade...in the firewall/VPN security appliance market."

—IDC, June 2001

"Closer to high-availability nirvana than any."

—Network World, December 11, 2000



"The Nokia IP530 is truly the best-of-breed platform in the firewall market."

—Information Security Magazine, September 2001

"A formula for earning our Editors' Choice."

—PC Magazine, September 25, 2001

"Easy to install and, more important, easy to restore."

—Network Computing, May 14, 2001



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Enterasys to debut WAN, legacy switch modules

■ BY PHIL HOCHMUTH

BOSTON — Enterasys Networks will debut wares for enterprise network backbones this week at the Next Generation Networks 2001 show.

New modules for Enterasys' X-Pedition backbone switches could help companies better integrate legacy network gear with newer technology such as Gigabit Ethernet.

Enterasys is introducing WAN modules for the X-Pedition ER16 switch, the company's 12-slot, flagship backbone and data center product. Also on tap is an FDDI module for hooking segments of a network still running on an FDDI ring to an X-Pedition ER16

New modules from Enterasys

Enterasys is displaying new modules for the X-Pedition ER16 switch at this week's exhibition in Boston:

24-port Fast Ethernet fiber module	\$36,000 for multimode
T-1 WAN modules	\$7,500-\$9,500
T-3 WAN module	\$12,000
Two-port OC-3 ATM module	\$11,000
Two-port FDDI module	\$10,000

in a network core.

The new serial WAN modules come in four-port versions for connecting to T-1 or T-3 lines. Security and quality of service (QoS) is included on the hardware with support for network

address translation (NAT), type-of-service packet prioritization and virtual LAN (VLAN) built into the blades. The T-1 module can also provide traffic security with Triple-Data Encryption Standard on the card. Also avail-

able will be a dual-port OC-3 (155M bit/sec) ATM module, and a two-port FDDI blade, both of which can also provide hardware-based QoS, type-of-service, VLAN and NAT support.

Enterasys is announcing four-port Gigabit Ethernet over fiber modules for the X-Pedition 8000 and 8600. They include features such as Jumbo Frame support — for increasing bandwidth performance by pushing Ethernet frames larger than the standard 1.5K bit size — and traffic flow rate limiting, which can be used to allocate bandwidth for certain types of traffic, such as enterprise applications or Web surfing.

While these modules shore up WAN and legacy connectivity

gaps in the X-Pedition, Enterasys is expected to announce next-generation modules for the X-Pedition later this month. Users can expect to see a two-port, two-slot, 10G Ethernet module for LANs coming out that will be based on the 850-meter range, single-mode fiber standard version. Enterasys will also add Layer 5-7 switching capabilities to the X-Pedition ER16 with a two-slot module that the company says can let every port in an ER16 perform Layer 5-7 packet inspection.

The software for the module will be based on technology from F5 Networks, which Enterasys announced last month as a reselling partner. ■

Time not on Resilient Packet Ring's side

Vendor politics could sap market for standard; Metro Ethernet Forum denies rivalry.

■ BY TERRI GIMPELSON

Time may be running out on an emerging standard for metropolitan Ethernet, as alternatives could beat it to market and close its window of opportunity.

As is usual in standards definition, the work on the IEEE 802.17 Resilient Packet Ring (RPR) is mired in political squabbling and the pursuit of proprietary interests and agendas. RPR is intended to optimize metropolitan ring topologies for packet transport with resiliency matching or exceeding SONET's.

But observers say RPR can ill-afford the infighting. The standard will take 18 months to fully bake, time enough for proprietary alternatives, including Cisco's Spatial Reuse Protocol (SRP), to fill the void.

That may be bad for businesses, because limited product choice for service providers means limited flexibility in negotiating equipment cost. If service providers have to pay more for equipment, they may charge more to provision the service that's based on it.

The RPR Alliance (RPRA) shrugs off the disagreements and says the standards work is on track.

"We have 90 companies involved with this standards effort," says Robert Love, chairman of the RPRA. "Everyone thinks their own

RPR in trouble?

Resilient Packet Ring development lags behind Metro Ethernet Forum specs.

RPR timeline

- **December 2000:** Group formed.
- **March 2001:** Objectives defined.
- **July 2001:** Consolidated technology proposals.
- **January 2002:** First draft expected.
- **March 2003:** Standard ratification expected.

Metro Ethernet timeline

- **June 2001:** Forum formed.
- **August 2001:** Technical Committee launched.
- **October 2001:** Technical specifications for architecture, Ethernet services and protection in MANs defined.
- **April through July 2002:** Standard ratification for some technical specifications expected.

flavor is best. Engineering issues and political issues encountered are normal in the early part of any standards process. From what I can see, though, we're still right on schedule with where we said we'd be."

While Love says there isn't one particular technology coming out head and shoulders above other proposals, there's a com-

mon agreement that Cisco's SRP technology, which defines transmission of IP over fiber rings, is the front-runner.

"Cisco has had a working technology for a number of years," says Ted Rado, former director of product marketing for Alidian Networks. "While they've had mixed success with it, they're the big gorilla here and the ones who are causing contention within the standards committee."

Cisco says the fact that it has had success with proprietary technologies is a plus.

"I think we bring an important advantage to the RPR effort," says Jeff Baher, senior manager of marketing for the metropolitan IP access group at Cisco. "We've been successful with our technology so far, and now we see there's a larger market there that we can address."

No competition?

The feeling within the RPRA and the 802.17 working group is that reports of RPR's struggle or eventual demise are coming from those who have the most to lose if RPR becomes a successful standard.

"The optical Ethernet guys are running scared," says Nigel Cole, vice president of business development at Corrigent Systems. "RPR is cheaper than optical

Ethernet so there's propaganda going on in the market to make optical Ethernet look better."

The Metro Ethernet Forum disagrees.

"Our primary priority is to accelerate the adoption of Ethernet as the transport technology in the metropolitan-area network," says Nan Chen, forum president. "RPR is a different transport than Ethernet. We aren't even competing. We're defining something that can be deployed today, they're defining something that doesn't exist yet."

Current nonexistence could be RPR's biggest impediment, says David Dunphy, a Current Analysis analyst.

"Even the best solution might not succeed if it comes to market after a less compelling alternative that had better timing," Dunphy said in a recent report. ■



More online!

Download a PDF of the Resilient Packet Ring Alliance timeline.

DocFinder: 6761

Also on tap at the show

Other vendors that will show new offerings at the NGN show include:

- **Gallery IP Telephony** will introduce a softswitch it says is the only true Class 5 soft-switch, meaning it has all the service features of a traditional local circuit switch. The company says it has software that lets users manage their own services.

- **Service provider Velocita** will announce what it calls an IP VPN service over its private IP network. Users are issued a block of IP addresses that are segmented on Velocita's backbone routers from the addresses of other users. The traffic is not encrypted.

The company says that by next spring it will introduce two other VPN services, one that is network based and switches traffic using Multi-protocol Label Switching, also without encryption, and one that would include encryption and be based on IP Security.

- **Corrigent Systems** will introduce its entry into the metropolitan-optical market with gear it says is compatible with SONET infrastructure already in place, but that costs less.

— Tim Greene

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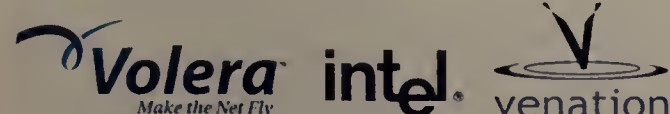
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HP shores up storage, mgmt. wares

Company's lineup includes products from RiverSoft, StorageApps and Trinagy.

■ BY DENI CONNOR AND
DENISE DUBIE

PALO ALTO — Hewlett-Packard in coming months will draw from existing and newly acquired products to put together an array of storage and network management tools.

Early next year, HP will introduce a bundled storage virtualization, data mirroring and snapshot back-up package that will consist of software, servers and storage, the company says. This week HP will upgrade its Internet Usage Manager, introduce a tool that uses RiverSoft Technologies software to expand HP's Network Node Manager, and officially add to its portfolio performance management software acquired along with Trinagy this summer.

On one side of the box, the stor-

age hardware, code-named SAVA 1.0, will consist of two dual-processor 1U (1.75-inch-high) HP NetServers connected via dual-port Fibre Channel adapters to two of the company's HP SureStore 7100 or 7400 Virtual Arrays. On the other side of the box, the hardware will connect to a storage-area network.

The software will "virtualize," or combine, storage into one pool of data that can be shared among the servers attached to it. HP is incorporating virtualization technology it gained in its acquisition of StorageApps this summer.

SAVA will also connect to storage arrays from Dell, LSI Logic Storage Systems, Hitachi Data Systems and EMC.

"SAVA brings expensive storage virtualization to the mass market," says Steve Duplessie, an analyst for Enterprise Storage Group. "HP's

Storage virtualization

Market research firm IDC estimates that consolidating the access and management of data in one location can slash storage management costs by **70%.**

present SANLink virtualization is \$350,000. If SAVA is priced at \$50,000 to \$100,000, everyone in the enterprise can afford that."

SAVA will compete with products from hardware from DataCore, FalconStor Software and StoreAge Networking Technologies.

The servers will run HP's SureStore SANLink software, which allows for the mirroring of data across storage arrays, point-in-time snapshot backup and the creation of a common pool of storage that can be shared among servers. In point-in-time copying, an image of the data can be written to a local or remote SureStore Virtual Array. While the SureStore Virtual Arrays have a capacity ranging from 70G bytes to more than 17.25 terabytes of data, HP says that SAVA will realistically handle no more than 6 terabytes of data.

The bundle can be supervised locally or remotely with HP SANMaster, and managed and configured with the SANLink utility.

HP says that SAVA could also substitute Fibre Channel adapters with iSCSI adapters for transferring block-oriented data over IP.

SAVA will start at less than \$100,000.

HP this week is also introducing a new version of OpenView Storage Area Manager that provides support for storage arrays from other vendors. It supports EMC Symmetrix, Hitachi Data Systems storage and Compaq StorageWorks Disk Arrays. Storage Area Manager lets an IT manager discover and monitor the configuration of storage devices.

On the management software side, HP this week will unveil an upgraded version of its Internet Usage Manager (IUM), a tool that,

while initially aimed at service providers, might also appeal to enterprise users, says Dennis Drogseth, an analyst with Enterprise Management Associates.

IUM can pinpoint who uses what network resources and how, and enterprise users may want to employ it within their companies as IT becomes more of a revenue generator, he says.

"Not only can software such as this help network managers justify what they spend, but it will also help them pinpoint the bandwidth hogs and charge back for IT services based on usage," Drogseth says.

HP also this week will introduce a product based on its Network Node Manager (NNM) platform. The new tool, NNM Extended Topology, which includes RiverSoft's Network Management Operating System, will let users manage their networks at Layers 2 and 3, and will offer event correlation. The software can determine which applications are using which switch ports and how well those applications are performing.

Deb Curtis, an analyst with Gartner, says the company may have erred by not including this technology with an NNM upgrade. "HP is likely to encounter some hesitation on the part of the installed base by not offering the technology as part of [its] maintenance contract," she says.

The company will also formally introduce network performance management software acquired along with Trinagy in August. HP OpenView Performance Insight for Networks and HP OpenView Trend Performance Manager are basically Trinagy products rebranded under HP, Curtis says. However, they add network performance management to HP's portfolio, which had focused on systems and applications performance management with PerfView and Measureware.

"Although it's an impressive turnaround, the obvious next step is to give users a performance management product that integrates systems, applications and networks," Curtis says.

Pricing for HP OpenView software is agent-based, depending on the number of managed nodes in the customer network. All the software should be available within 90 days. ■

HP takes action with Netaction

Hewlett-Packard last week revamped its Internet-based Netaction software to help users more quickly integrate, develop and deploy Web-based applications.

The company rolled out Netaction Application Server 8.0, which HP obtained from Bluestone last year. Version 8.0 will make it easier to customize e-commerce applications. The server upgrade features a portal framework that will let users build customized portals for business-to-employee internal networks and business-to-business service networks from a variety of data sources. The software supports Java 2 Platform Enterprise Edition 1.3.

The server upgrade was part of a larger announcement that featured additional software development tools (see www.nwfusion.com, DocFinder: 6760).

Z-Tel Technologies, a Tampa, Fla., telephone service provider offering Web-enhanced service to residences, has been testing Version 8.0 and plans to run its community voice portal and voice mail, fax mail, address book and e-mail on the application server.

"[Application Server 8.0 is] easier to configure, set up and run, and that has been the Achilles' heel" for the application server's previous version, says Dan Cripe, vice president of application development. Earlier versions of the application server, for instance, had configuration information in different locations. Now the configuration instructions are located in one file.

Analysts say this week's announcement was long overdue.

"I'm glad to see Bluestone is playing a key part of [HP's] strategy, but I wonder if it's too late," says Chris Dial, an analyst at Forrester Research. Companies likely already own application servers from the likes of IBM and Sun, so HP will have to figure out how to convince customers to switch from its rivals, he says.

Even with the improvements in Version 8.0, HP still needs to fill in missing elements such as content management and e-commerce support, Dial says.

Pricing for the application server, which runs on HP Unix, Microsoft Windows NT 4.0, Sun Solaris 8 and Red Hat Linux 7.1, will be available later this month.

— Kathleen Ohlson

NetworkWorld

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Microsoft settlement: Catch and release?

■ BY JOHN FONTANA

While Microsoft's antitrust case may set a precedent in legal circles, for network executives the 3-year-old case is seen as more of an impediment to solving enterprise-focused issues.

On Friday, Microsoft and the Department of Justice submitted a proposed settlement, or final judgment, in the case to U.S. District Judge Colleen Kollar-Kotelly.

IT executives say any conclusion to the antitrust case, either negotiated with the Justice Department or litigated in the courts, will have little impact on them. They say they would like to see a swift end that would allow Microsoft's undivided attention to enterprise network issues.

"The licensing decisions Microsoft has made recently have had a far more negative impact than anything the Justice Department could do to them," says Joshua Canary, infrastructure engagement manager for Collective Technologies, a systems integrator.

For the past five months, Microsoft has been inundated with customer complaints because of recent licensing changes for enterprise software. Several research firms have shown that software-licensing costs could increase by as much as 100% for some companies. Microsoft has altered de-

tails of the plan twice since May.

"If this has been diverting attention away from work on licensing, Windows XP or Windows 2000, then the benefit for the enterprise will be to see the case end," Canary says.

The most hotly debated provision of the settlement, according to sources, was one that requires Microsoft to submit source code for review if compliance issues arise. Microsoft has said all along

that it would fight to protect its intellectual property.

But some say results of a proposed settlement, including opening Windows source code for review, also have little appeal.

"In the grand scheme of things, whatever is settled at this point doesn't seem to affect us directly," says Ken Winell, CEO of Econium, which develops XML-based enterprise applications for Microsoft .Net and Java technology.

Winell says Microsoft's biggest challenge is to develop a decent licensing agreement for corporate customers, including one based on offering software on a subscription basis. "Right now they have nothing in that area," he says.

Winell also is concerned that this case is not over yet.

The 18 states that are a party to the antitrust suit have not agreed to the settlement and will have a

hearing on Nov. 6 to ask for more time to draft a reply, says Bob Brammer, a spokesman for Iowa Attorney General Tom Miller.

Microsoft and the Justice Department reached a settlement in the case after three weeks of talks. Microsoft's Chief Software Architect Bill Gates said in a statement "resolving this case now is the right thing to do." He said that would enable Microsoft to focus on the future.

The settlement calls for a five-year consent decree that would establish an industry panel to review Microsoft's conduct with PC makers and software rivals.

Microsoft's skirted around another consent decree it signed in 1994, which led to the current antitrust case. Some are wary of a repeat of that fiasco.

"In fishing parlance, this sounds like a catch and release," says John Kretz, president of the Enlightened Point Consulting Group. "Microsoft has proven [it] will only sign a consent decree after [its] lawyers have found all the loopholes. I get the sense that the feds are caving. There is just cause to looking further at this case, especially based on the bundling done with Windows XP."

If the settlement fails, Judge Kollar-Kotelly will oversee the remedy phase of the case, which would begin in March. ■

Proposed settlement provisions

The Department of Justice and Microsoft presented a proposed final judgment in their 3-year-old antitrust case to U.S. District Court Judge Colleen Kollar-Kotelly last week that included these key provisions:

- A panel of three independent computer experts will reside at Microsoft to assist in enforcing the proposed final judgment. The panel will have full access to Microsoft's books, records, systems and personnel, including source code, to help resolve compliance disputes.
- Microsoft must license any intellectual property to computer manufacturers and software developers necessary for them to exercise its rights under the proposed final judgment.
- Microsoft must provide software developers

The agreement ... will stop Microsoft's unlawful conduct, prevent recurrence of similar conduct ... and restore competition in the software market ...

—Statement from the Justice Department

- with the interfaces used by Microsoft's middleware to interoperate with the operating system.
- Microsoft must disclose server protocols to ensure that non-Microsoft server software can interoperate with Windows on a PC the same way that Microsoft servers do.
- Microsoft will have to license its operating system to computer manufacturers on uniform terms for five years.
- Microsoft is prohibited from entering into agreements requiring the exclusive support or development of certain Microsoft software.

Groove bolsters collaboration software features

■ BY JOHN FONTANA

Groove Networks last week introduced three servers designed to answer IT executives' demands for management control over Groove's peering-based collaboration software.

The company also unveiled Groove 1.3, its newest client software that includes integration with key desktop elements of Microsoft's .Net strategy, a plan to deliver software as a service over the Internet.

Both developments highlight the coming wave of changes in the way collaboration software will be deployed for use in and among corporations.

The Groove developments emphasize that collaboration software is becoming less of a stand-alone product and more of an add-on to existing productivity and line-of-business applications, such as customer relationship management (CRM).

"We have many tools riding on top of collaboration so people can input ideas," says Greg Mack, vice president of IT & Internet-

working for Syntek Technologies, which is using Groove as the foundation of several projects for the Defense Advanced Research Projects Agency. "We are working on the next generation of collaboration by integrating it into the reasoning process where collaboration becomes part of the fabric of people working together."

Groove's integration with Microsoft is significant given that the software giant has announced it will add real-time collaboration components, such as sharing of calendars and applications, into its base server operating system with the release of Windows .Net early next year.

"Groove is trying to make its software more familiar and unthreatening to the IT buyer," says James Kobielski, a Burton Group analyst and a *Network World* columnist. "The implication is that Groove will be embedded in .Net in ways that are now undefined but will clearly center on real-time collaboration."

Two weeks ago, Microsoft made a \$51 million investment in Groove to reinforce that.

The upshot is that enterprise customers can access real-time components directly from applications running on Windows, such as CRM, providing the ability, for example, to start a chat session or track document sharing with a customer from within an application.

Groove certainly doesn't want to miss that opportunity with its peer-to-peer client for ad hoc interenterprise collaboration — a client Microsoft does not currently have.

Groove 1.3 is now integrated with Windows Messenger, letting users send messages and invitations between Messenger and Groove Shared Spaces; and with Microsoft Word, letting users edit and annotate Word documents within Groove. Support for Excel and other Office applications will follow.

But because the real value in that type of collaboration is

in a business-to-business relationship, Groove must answer enterprise concerns over management and is doing so with three servers it will ship early next year.

The servers — Relay, Enterprise Management and Enterprise Integration — allow for the management of bandwidth, access control, transactional-based messaging, access and security policy controls, integration with standards-based directories and legacy data. ■

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MPLS

continued from page 1

connectionless IP networks. The idea is to steer IP traffic onto a variety of routes instead of the single one discovered by an interior gateway protocol such as Border Gateway Protocol, to avoid congestion or failures, or to enable a particular class of service or guaranteed service level.

MPLS switches and routers affix labels to packets based on their destination, type-of-service parameters, VPN membership or other criteria. As a packet traverses a network, other switches and routers build tables associating packets and routes with labels. The MPLS switches and routers — dubbed label switch routers — assign each packet a label that corresponds to a particular path through the network.

All packets with the same label use the same path — a so-called label switched path (LSP). Because labels refer to paths and not endpoints, packets destined for the same endpoint can use a variety of LSPs to get there.

With all the interest and alternative proposals for IP traffic engineering, the Internet Engineering Task Force started an MPLS working group in 1997. Core specifications for MPLS were defined about a year ago.

Vendors, service providers and analysts say MPLS is about 75% to 80% baked, with work still outstanding on MPLS-to-ATM/frame relay interworking and quality of service (QoS), among other things.

Who's on board?

Currently, there are about 30 carriers and service providers implementing or planning to implement MPLS, according to an unofficial tally by the MPLS Forum, an international body formed in early 2000 to accelerate the adoption of MPLS and create implementation agreements drawn from standards work. Separately, Cisco says it has more than 80 MPLS customers, while Juniper and Unisphere say they have 10 or less apiece.

Strong support

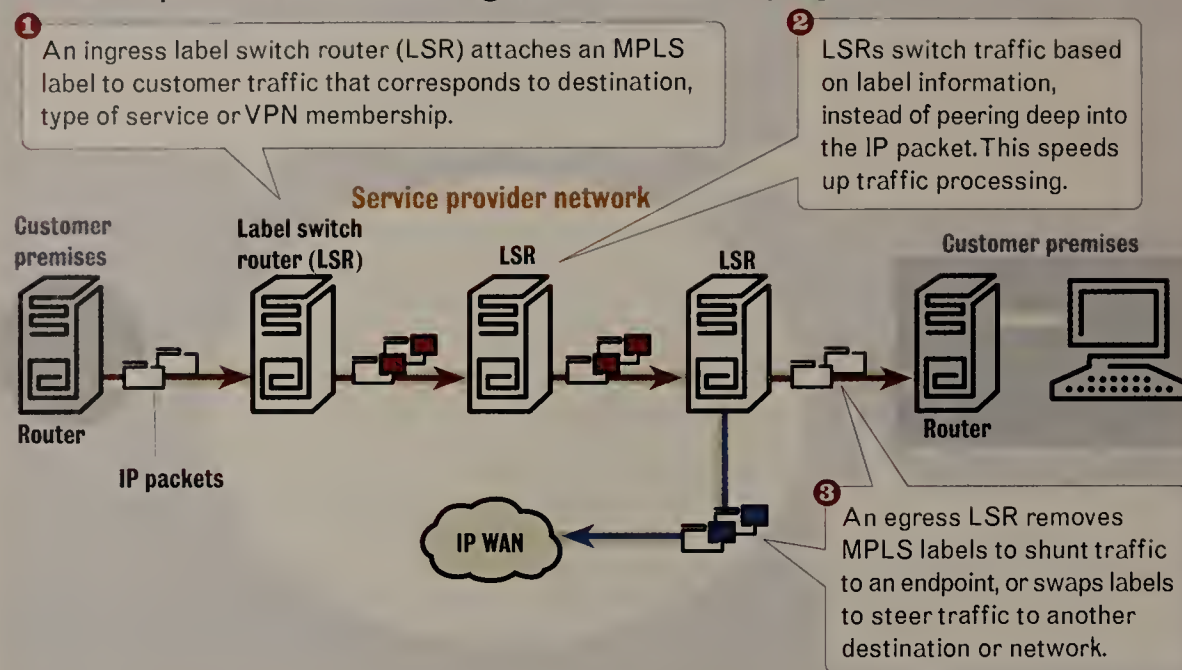
Some of the 32 carriers implementing MPLS:

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- Level 3 Communications
- Qwest Communications
- Sprint
- Williams Communications
- WorldCom

SOURCE: IP NETWORK

Shipping labels

How Multi-protocol Label Switching (MPLS) works to rapidly steer IP traffic:



Interestingly, the MPLS Forum list does not include any of the RBOCs on its list, a point not lost on analyst Tom Nolle, president of consultancy CIMI Corp. and a *Network World* columnist.

"The watershed for MPLS [will be] the RBOC regional network buildouts that will start next year," Nolle says. "If MPLS has the ability to play a role in those buildouts, that frames MPLS in a commercially successful context and pretty much assures it becomes more widespread as a standard. If it can't play a role, then it's going to be much harder for any kind of significant MPLS evolution to take place."

SBC Communications will run an MPLS-enabled optical Ethernet trial next year using a single vendor's equipment, says Christopher Rice, a senior vice president for the carrier. Rice does not envision MPLS scaling throughout SBC's network until late 2003 or early 2004, when vendors can prove interoperability between their gear.

For corporations, MPLS will enhance the QoS of optical Ethernet virtual LAN services, Rice says. MPLS is also vital in ensuring toll-grade quality of soft-switch-based packet telephony networks.

"MPLS is a key element," Rice says. "It just has to truly have interoperability or it's really not effective."

A year ago, BellSouth released plans to use MPLS in a Miami network access point (NAP). The RBOC says that will happen in the first quarter of next year. The NAP links data traffic

between the U.S., Latin America, the Caribbean, Africa and Western Europe. MPLS will allow the NAP to support next-generation multimedia applications such as voice and video over the Internet, BellSouth says.

MPLS will also allow additional network capacity to be turned up automatically at the NAP, where the carrier says traffic demand doubles every two to three months.

BellSouth is also looking to migrate its ATM/frame relay and circuit-switched core to MPLS for cost reduction and operational efficiencies. The RBOC also may offer an MPLS-based VPN service, but company officials would not say when.

Verizon did not return phone calls by press time. Qwest Communications, which acquired RBOC US West, is one of the 30 carriers on the MPLS Forum list implementing or planning to implement MPLS.

Among interexchange carriers, AT&T was one of the first carriers to employ an MPLS-based service. AT&T's IP-Enabled Frame Relay and IP-Enabled ATM services use MPLS to construct private tunnels for IP VPNs across the carrier's existing frame relay and ATM transport infrastructures.

"The future is tied to being able to provide customers VPN solutions," says Tim Halpin, AT&T's director of frame relay and ATM services. "Especially on our frame and ATM private network-based VPNs, MPLS is critical to that. By doing label switching, I can minimize the

amount of IP lookups that are done. . . . I can minimize the amount of latency that that application adds to the transport service."

There's much discussion in the industry that MPLS will eventually replace ATM and frame relay as the core of a multiservice — voice, video and data — infrastructure. Lucent, the leading vendor of ATM switches to service providers, for example, killed its next-generation ATM core switch in order to get an MPLS-based switch to market faster to meet the demand among its customers.

Established and start-up companies, including Equipe Communications and WaveSmith Networks, are developing next-generation ATM/frame relay switches with a migration path to IP/MPLS.

But Halpin warns that frame relay and ATM provide four things that IP/MPLS currently cannot: highly reliable transport; guaranteed performance; low latency; and security.

"By layering a VPN on top of frame, I inherit all of those characteristics of frame," Halpin says. "Don't tell me you're going to kill frame unless you can deliver those same kinds of things, or better."

A slow migration

Equant sees the transition of ATM/frame relay to MPLS happening in much the same way that customers migrated from X.25 to frame relay — gradually, over several years.

"Most of the new customers will be more and more implemented on IPVPN and not frame," says Guillaume Boudin, director of Equant's IP product line. "Lots of existing customers will be progressively migrated from legacy data services to IP VPN. But some of them will also probably remain on those data services for a while."

Equant has 400 subscribers in 140 countries for its MPLS-based IP VPN service. MPLS' traffic engineering capabilities are also helping Equant scale its IP backbone, Boudin says, and Equant is considering using MPLS traffic engineering next year to further fine-tune service-level agreements on its existing prioritized class- and quality-of-service IPVPN features, or to introduce new differentiated services.

But the progress made by carriers such as Equant and AT&T in MPLS is the exception, not the rule, says Bob Bellman, president of consulting firm BrookTrail Research.

"It's all new and semi-unproven, so carriers are taking their time," he says.

Next week: The benefit of MPLS traffic engineering.



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Dell devices make adding net storage easier

■ BY DENI CONNOR

AUSTIN, TEXAS — Dell promises network managers will be able to easily and quickly consolidate and manage storage on their heterogeneous networks with three new network-attached storage servers the company is expected to roll out this week.

The Dell PowerVault 755N, 750N and 715N network-attached storage (NAS) servers, based on Microsoft's Windows 2000 Advanced Server operating system, replace Dell's entry-level PowerVault 701 and 705 servers and midrange 735 servers. They can be installed on existing networks in as little as 15 minutes, the company says. The devices operate on Windows, NetWare, Unix, Linux and Macintosh networks and include software that protects against data loss and network downtime.

NAS servers are becoming a popular way to quickly add storage to a network. According to market research firm IDC, the NAS market will grow 63% yearly from 2000 to 2004, nearly doubling the sales of stor-

age-area networks (SAN).

Dell's new products include Active-Archives software, which creates images of stored data that can be used to guard against loss from network disruptions. They also contain LAN-free back-up software, allowing backups of data without disrupting network operations.

One Dell customer says the new features will be welcome.

"We have an older 735N we use as an on-line software library that we never want to lose," says Paul Mabry, manager of network systems engineering at Morgan Keegan, a large investment firm in Memphis, Tenn. "We'll be putting a PowerVault 755N in our disaster-recovery center and use Active-Archives' snapshot capability to duplicate the information on the 735 because it's mission-critical."

Morgan Keegan's hot-site disaster recovery center is 25 miles away. The PowerVault will connect to a Fibre Channel loop that connects the company's network.

The PowerVault 750N and 755N are designed for departments and workgroups

Dell's PowerVault 755N

The 755N network-attached storage device works on NetWare, Windows NT, Unix, Linux and Macintosh networks. Features include:

- 160G bytes to more than 7 terabytes.
- Rack-mountable or tower configurations.
- Allows direct-attached tape backup.
- Connects to network via dual 10/100M bit/sec Ethernet.
- Web-based administration.



within large companies and can scale to more than 7 terabytes of data. They support clustering for greater availability and fault tolerance.

One of the most important features of Dell's NAS devices is that they are Micro-

soft-certified to run SQL Server 2000. Many users want to use their NAS servers to host database or messaging applications.

"Database vendors are saying they are perfectly comfortable with running their databases on file-serving NAS architectures rather than block-oriented SANs, so Microsoft SQL Server certification is a natural fit," says Tony Prigmore, an analyst with the Enterprise Storage Group. Other vendors, including Network Appliance, have certified their file servers to run Oracle databases.

The PowerVault 715N is scalable to 400G bytes and is designed for small businesses or remote offices.

These NAS devices compete with similar products from Compaq, Maxtor and Quantum. They are the first devices to support Novell's e-Directory software used in NetWare.

The PowerVault 750N and 755N are available immediately starting at \$8,700; the PowerVault 715N will begin shipping later this month starting at \$2,000.

Dell: www.dell.com/powervault

Bankruptcy

continued from page 1

Their product development efforts and services won't necessarily be disrupted or discontinued, but customers could be left in limbo for an extended time and should have a solid fallback plan.

Sure, companies as varied as Continental Airlines, Macy's and Texaco have resurfaced after filing for Chapter 11 protection, but experts say it's tougher for technology companies to bounce back because their businesses tend to rely so much on momentum.

"If you're in Chapter 11, you've probably lost your momentum," says Michael Feinstein, a principal with venture capital company Atlas Venture.

The list of network industry Chapter 11 cases this year is a long one — Comdisco, Covad Communications, Exodus Communications, Metricom and Rhythms are just a few companies that have filed for protection in recent months (see graphic). It has been an especially cruel year for telecom outfits, with 24 publicly traded ones filing for protection, roughly triple the number from each of the previous two years, according to BankruptcyData.com.

It's tough to draw comparisons between what struggling network companies are going through

Chapter 11 roll call

Here's a sampling of network companies that have filed for bankruptcy protection this year:

Jan. 16	NorthPoint Communications
April 18	Winstar Communications
May 21	Teligent
June 1	PSINet
July 2	Metricom
July 16	Comdisco
Aug. 2	Rhythms NetConnections
Aug. 8	Covad Communications
Aug. 16	FutureLink
Sept. 10	Breakaway Solutions
Sept. 26	Exodus Communications

today and what famous Chapter 11 survivors like Texaco (now ChevronTexaco) experienced.

Texaco, for example, filed for Chapter 11 in 1987 to avoid paying a \$10 billion court decision after the oil giant was found to have used illegal activities in trying to acquire Getty Oil. Texaco filed for Chapter 11 despite owning more than \$37 billion in assets — a situation any bankrupt technology company would kill to be in.

Most bankrupt technology firms use Chapter 11 protection as a time during which to settle on their best suitor, if there are any, says Robert Keach, chairman of the Business Reorganization

Committee of the American Bankruptcy Institute, a group that provides bankruptcy research and education.

In a typical Chapter 11 case, the best interests of the creditors and customers are served by having the business sold as a whole entity, rather than being chopped up and sold piecemeal, Keach says.

"With an ISP, for example, you're likely looking for a quick transaction involving the entire business," he says. "You don't want the network or the customers to go away. If you lose a few pieces, the value of the company disappears quickly."

Many of the cases involving network companies that have filed for Chapter 11 this year remain unresolved. Those that have been resolved show mixed results:

- Rhythms sold most of its assets, including equipment, collocation rights and customers, to WorldCom for \$40 million. WorldCom has said it will continue to serve Rhythms' customers.

- Fixed wireless carrier Teligent is set to emerge successfully from Chapter 11 with new equity backers, the same management team and its core markets and customers intact. After going into Chapter 11 in May, with \$1.65 billion in debt and \$1.2 billion in assets as of Dec. 31, 2000, a newly created venture paid \$117 million for Teligent's assets.

- Disaster recovery firm Comdisco is selling its disaster recovery business to Hewlett-Packard for \$750 million, leaving rival suitor SunGuard Data Systems empty-handed.

- The most notorious Chapter 11 case this year was the dismantling of national DSL provider NorthPoint Communications. After failing to find a buyer for its business, NorthPoint sold its collocation rights and equipment to AT&T. However, the deal did not include NorthPoint's 100,000 customers, who were forced to scramble to find new service providers.

Of the companies still in Chapter 11, it appears that DSL provider Covad may emerge as an independent company.

However, Covad entered Chapter 11 with a specific plan, after agreeing to terms with holders of the majority of the company's debt, which would have creditors receive a fraction of what they were owed in cash and the remainder in stock. The deal would leave Covad with a much lighter debt load and a better chance to survive.

None of the other remaining Chapter 11 cases is as clear-cut.

Service provider Cable & Wireless has mentioned ISP PSINet as a possible takeover target.

Rumors have also linked bankrupt hosting giant Exodus, sad-

dled with \$3.5 billion in debt, to Cable & Wireless.

In a September conference call with customers, shortly after filing for Chapter 11, Exodus CEO William Krause said the company was looking to restructure — a process that would take between four and eight months. But he didn't rule out an acquisition.

"If we have somebody that wants to buy our company that is deemed by creditors and shareholders to have value, we will absolutely bring that forward," he said. "However, it's our intent to operate as an independent company, and I am confident given the assets and resources that we have that we can do that."

Fixed wireless provider Winstar is looking for investors, and officials say interested parties include other carriers, as well as private equity firms.

In a recent interview with *Network World*, Winstar CEO Bill Rouhana said the company would be best served to get out of Chapter 11 as quickly as possible.

"Even though we are now quite vibrant — we're actually growing — if you're a customer you have to take a deep breath to jump into the Winstar pool today," he said. ■



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Growing pains slow wireless CRM rollouts

Companies are tempted, but cost and complexity keep away all but a few early adopters.

■ BY ANN BEDNARZ

John Weetenkamp describes his company's recent wireless pilot project as "a great learning experience for all parties," but he isn't about to rush out and buy the products and services necessary to expand it to the entire sales and marketing staff at power tool manufacturer DeWalt.

For six weeks this summer, 11 staff members worked in the field for Black & Decker's DeWalt division recording customer data into enterprise databases and accessing product catalogs using Compaq iPAQ handheld devices equipped with Sierra Wireless Air-cards. Although Weetenkamp considers the pilot a success, the DeWalt e-business marketing manager says it revealed obstacles to a full-scale wireless customer relationship management (CRM) rollout.

"This is not mainstream technology," he says. "It's got its fair share of challenges at this point."

Weetenkamp's impressions mirror those of industry experts who say widespread wireless CRM rollouts won't happen before 2003.

"Pilot is the key word," says AMR Research's Dennis Gaughan. "Nobody's really in full deployment right now."

Limited functionality, immature standards, slow transmission speeds and inconsistent wireless

service are among the obstacles to adoption. Also, the price of gear, service and administration remains high.

Factor in the price of a mobile device, plus application software, wireless service, maintenance and support, and each user's tally can hit \$3,000 per year, says Adam Sarner, an analyst with market research firm Gartner.

Nonetheless, mobile functionality is becoming a must-have for CRM vendors.

All major vendors have rushed to deliver mobile features — and at a more accelerated development pace than many would have liked, says Roy Dube, global leader of mobile business solutions at PricewaterhouseCoopers Consulting. Customer interest and the need to stay competitive have sped delivery timetables.

"Every customer is asking for it," says Ganesh Bell, vice president and chief software architect at CRM vendor Youcentric (which was acquired in August by J.D. Edwards). "They want to know that you are capable of delivering it when they decide they're ready."

Always-on employees

Fueling interest in wireless CRM is the desire to get information quickly to and from employees in the field.

The most fitting users for this

service are those who require timely access to data — such as salespeople, service technicians and partners who need visibility into supply-chain conditions.

The idea is that just before a client meeting, a sales representative could be alerted if the customer logged a service request. Or midway through a meeting, a representative could send a request for collateral material to be faxed or e-mailed immediately to the client.

"The mobile professional that's customer facing has the same need to access all that information as the salesperson sitting back in the office," says Richard Heitmann, mobile solutions product manager at vendor Onyx.

And it works both ways. In-house employees stand to benefit from such constant communication with field workers. If a salesperson updates contact information and sales forecasts on the road, the information the rest of the company's employees see is always up to date.

By hooking in field service technicians, companies could reassign these employees for more efficient call dispatching, speedier parts delivery and better service. And if a field service representative captures a signature acknowledging receipt of service, that transaction fed to enterprise network systems could trigger invoicing processes on the back end.

For exercise equipment maker Cybex, the intent was to give traveling sales representatives access to customer order status.

The wireless pilot was PeopleSoft's idea. The software vendor approached Cybex after it added PeopleSoft's eStore Web order management software to its lineup of PeopleSoft enterprise resource planning applications.

Cybex agreed to try the wireless interface — which took 45 minutes to install, says Brian Lyman, manager of business solutions at Cybex. It was a matter of loading a few pages of code, he says.

Now Cybex salespeople can track orders from the road using a mobile device. "It makes them look a lot smarter in the eyes of the customer because they don't have to call in," Lyman says.

Thus far, only a few Cybex salespeople take advantage of

Application priorities

E-mail is the most popular use for wireless data technology, with

69%

of 686 companies surveyed including it in their plans. Field service (51%), warehouse management (49%), and salesforce automation (45%) applications follow.

SOURCE: AMR RESEARCH

the wireless tools, but those that do are hooked. "In some cases we don't hear from these guys anymore," Lyman says. "They can get the data they need."

Once Cybex upgrades to PeopleSoft 8, representatives can place orders wirelessly. "Our objective is to provide more information at the customers' convenience by whatever means possible," Lyman says.

Investment levels vary

One big difference between the wireless projects undertaken by DeWalt and Cybex is the complexity of the implementations.

At Cybex, wireless features are limited, but so was the company's investment. Aside from procuring the devices and wireless service, Cybex relies solely on the software tools supplied by PeopleSoft.

Meanwhile, DeWalt worked with wireless gear maker Aether Systems and systems integrator Dimension Data for its pilot, which could be far more comprehensive than the Cybex setup.

Projects such as DeWalt's that incorporate a wireless infrastructure platform from a vendor such as Aether can scale to handle multiple applications, which experts say is required for a companywide wireless strategy. Wireless middleware handles variations in different software vendors' technologies.

"If you're just looking to provide opportunity leads to your salesforce, you can do that with your CRM vendor, for the most part,"

says AMR Research's Gaughan. "If you have six different applications you're looking to mobile-enable — one of them being CRM — and each vendor's mobile functionality is different, that's potentially six different technologies that you're going to have to deal with."

Unfortunately, the complexity of a full-blown wireless initiative is even tougher to justify in today's economic climate.

"The economy is certainly an issue," says Jim Allbery, solutions manager for eCRM at Compaq Global Services. "This is new technology, and the [return-on-investment] story is not established. Many companies are taking a conservative posture."

Compaq Global Services has been involved in a few wireless pilots with "mixed results," Allbery says. It just signed its first deal for a rollout of wireless CRM for a telecommunications service provider. The system will focus on mobile salesforce automation and will cover 500 to 1,000 seats.

At the same time, one financial services company reported bad quarterly results and subsequently canceled its wireless pilot, Allbery says.

DeWalt, meanwhile, isn't going so far as to rule out a wireless rollout. The pilot accomplished what Weetenkamp hoped it would. He and his team members are educated about the technology and prepared to evaluate how DeWalt can benefit from wireless functionality.

"Until it gets to the point where development costs level off and the learning curve levels off and product technology matures to be a more stable platform, you really need to look at the return you're going to get for your investment," Weetenkamp says. ■

What to ask before you buy

Is it really necessary? Unless an application is business critical, it won't deliver benefits that warrant investing in wireless technology, says Gartner analyst Adam Sarner. He cites Harrah's Entertainment, where employees on casino floors use handheld devices to monitor customer spending and reward high rollers on the spot with perks such as free lodging or meals, increasing customer loyalty. "Now that's a good use of the technology," he says.

Is it usable? Not every function is appropriate for handheld devices with small screens and tedious input mechanisms. Minimal navigation, judicious transactions and filtered content are key. "I don't think anyone will find it practical to configure a quote on a phone," says Juliette Sultan, Oracle's vice president of CRM product strategy.

Is it scalable? There aren't sizable deployments that vendors can point to as evidence of their wireless products' scalability because implementations are scarce, says AMR Research's Dennis Gaughan. "Make your vendor show you how this thing can scale," he says.


— Ann Bednarz



More online!

Read about how one healthcare company's wireless CRM project is paying dividends.

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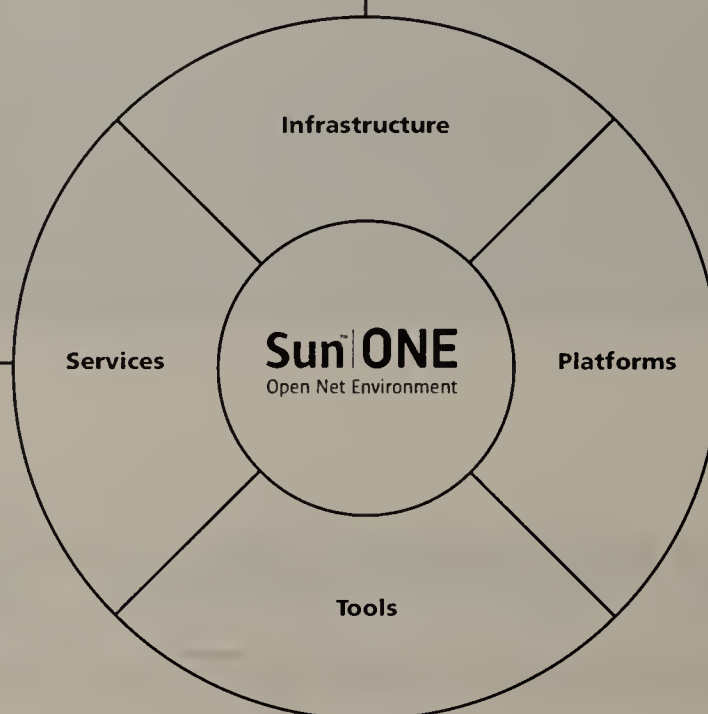
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Short Takes

■ **Phonetics** recently launched hardware and software that monitors computer rooms and network devices for intrusions and interruptions in operation. The **Infrastructure Monitoring System-4000** (IMS-4000) monitors the temperature and humidity of IP devices for changes that may affect network performance. When an unfavorable condition is detected, an alert is sent to the appropriate personnel. The IMS-4000 also detects variances in environmental conditions such as ambient air temperature, water, power surges/outages, smoke and unauthorized access to facilities. Each IMS-4000 can support up to eight environmental sensors. It also can monitor any device that has an IP address. The IMS-4000 costs \$2,000 and will be available in December. www.ims-4000.com

■ Sending jobs to print shops over the Internet could get easier and more reliable, thanks to a new software development kit announced by graphic design and printing vendor **Adobe** last week. The kit, built around Adobe's PDF technology, is called **PDFTransit** and will let a customer create PDFs to preview and then upload into his print shop's workflow system just by pressing the "Print" button in PDFTransit-enabled applications and services. Other options that can be offered include billing and finishing information, Adobe says. PDF is central to Adobe's electronic publishing vision and has become a de facto industry standard in recent years. The technology lets relatively small files with graphics and page layout features be viewed on any computer that has the Adobe Acrobat Reader application installed. PDF also replicates colors, fonts and graphic design elements across all platforms. AlphaGraphics and IKON Office Solutions are among the first printing companies to implement PDFTransit, Adobe says. www.adobe.com

Content peer groups fall flat

■ BY APRIL JACOBS AND JENNIFER MEARS

Launched amid much fanfare over a year ago, Content Bridge, a peering exchange pushed by Inktomi, and Content Alliance, a Cisco-led venture focused on developing technology standards for sharing content across networks, are going nowhere fast, victims of politics, competition and the tough economy.

Both groups have seen members go out of business recently, and Content Bridge operators admit companies today are focused on other, more pressing issues.

"The economy has definitely affected the ability of all the participants to get together," says Kurt Merriweather, senior product manager of content delivery services for Digital Island, which took control of Content Bridge in July. He couldn't say when the group, which lists about two dozen members on its Web site, planned to meet next.

Content Alliance, which claims to have more than 100 members, is having a bit better luck as it continues to move ahead with its effort to develop open protocols and standards for routing content, delivering content and billing users as information traverses different networks. The idea is to enable content delivery networks (CDN) to act similarly to telephone companies, which routinely share networks to extend their reach.

Members of both Content Bridge and Content Alliance submitted drafts for proposed content peering technical standards to the Internet Engineering Task Force (IETF) in December. They are now working together in the Content Distribution Inter-networking (CDI) Group.

But even as the CDI Group awaits its charter from the IETF and prepares for its next meeting in December, analysts say very little has been accomplished. They add that

The content report card

Introduced over a year ago, the Content Bridge (includes AOL and Inktomi) and Content Alliance (which includes Cisco and Cable & Wireless) forums had grand plans on how to build content peering networks. Here's a report on what they have achieved so far.

Chief goals:

Pass ☒ Fail ☒ **Create unified platform for content delivery:** Peering exchange technology was rolled out in January 2001 but has since stalled.

Pass ☐ Fail ☒ **Attract and educate customers on the value of peered networks:** Initial resellers out of business; other vendors inactive.

Pass ☐ Fail ☒ **Develop standards for peering:** Content Bridge and Content Alliance are working together via the IETF, but the effort is largely stalled.

Pass ☐ Fail ☒ **Enable customers to deliver content in a more timely fashion:** Many customers have moved on to deliver content privately.

standards created by the group probably won't cause any impact for years.

"In the area of standards development [Content Alliance] absolutely trails the [content delivery] business," says Peter

Christy, research director at Jupiter Media Metrix. "It hasn't facilitated the business. It hasn't been a great success or failure. There clearly will be standards. Cisco will

See Content, page 24

Access control software on tap from Neoteris

■ BY TIM GREENE

SUNNYVALE, CALIF. — Start-up Neoteris is parlaying Web-browser technology that protects online credit card sales into a simple, secure way for employees and business partners to access your network.

Neoteris makes proxy server hardware devices and software called EmployeeAccess and PartnerAccess that mediate Secure Sockets Layer (SSL) sessions between users on the Internet and LAN servers that are protected by a corporate firewall. SSL is 168-bit encryption developed by Netscape that is used to set up secure Internet links between Web browsers and Web servers, and is considered the security standard for Internet money transactions.

Remote users with Web browsers that support SSL, such as Netscape Navigator and Microsoft Internet Explorer, authenticate to the Neoteris server, which sits between a corporate firewall and the

LAN. SSL or Secure HTTP traffic comes and goes to the Neoteris gear via TCP ports in the firewall. Authentication can be completed via existing Remote Authentication Dial-In User Service servers with links to Lightweight Directory Access Protocol, Windows Domain or Unix NIS directory servers.

To add or remove users, your network administrators grant or revoke rights on the Neoteris authentication server. Neoteris says this one-step method of enrolling and unenrolling authorized users is well-suited for quickly setting up and tearing down extranets that let business partners access your corporate resources.

No other products support secure remote access in this way, says Joel Conover, an analyst with Current Analysis. But service provider Aven-tail offers services based on similar technology.

In some respects, the Neoteris access See Neoteris, page 24



More online!

Check out an online slide show for more info on Content Bridge.

DocFinder: 6733

WIRED
WINDOWSDave
Kearns

I watched Bill Gates at the Windows XP launch and started having flashbacks to the Windows 95 launch. I sometimes wonder if Gates has some genetic predisposition that causes him to believe that history doesn't exist — or, perhaps, the past is whatever he says it is.

In August 1995, Gates told us that the era of DOS was over — that while Windows 3.1 sat on top of DOS, Windows 95 would banish MS-DOS to the scrap heap of history. No matter how many analysts and commentators said otherwise, we were

DOS is dead, long live DOS

assured that DOS was gone. Then came Windows 98, which — we were assured — further buried DOS. Not that it needed to be buried, you understand, but still — just in case you were worried, Gates said it was really gone now.

Once again when Windows Millennium Edition was launched, as expected, we were told that finally DOS was gone. Redmond admitted that it had played a small part in Win 9X (like, the operating system couldn't exist without it), but ME had finally done away with DOS — you couldn't boot it to DOS; there wasn't even an "MSDOS Mode" listed! Wasn't that proof enough?

Now Microsoft has launched Windows XP. Evidently Gates is recycling his launch speeches because he said, "... so today it really is actually the end of the MS-DOS era" And, oddly enough, he really

expects us to believe him. That is, believe him now and ignore what he'd said before.

In a few years we'll be seeing the next version of Microsoft's operating system, the one that's currently called "Blackcomb." I'll wager my dollars against your doughnuts that sometime during the launch event we'll hear Gates tell us that — once and for all — DOS is dead.

DOS, the Freddy Krueger of operating systems/environments, may be dead, but all these little utilities users have gathered over the years still want to run in that command line space, breathing new life into the old operating system, and Gates will keep trying to bury it.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at

wired@vquill.com.

Tip of the Week

Everyone preaches SCSI disk drives are necessary for network servers — but **Integrated Drive Electronics** (IDE) drives are cheap, so the bean counters want you to use them. What can you do? Check www.acard.com/eng/ and check out the add-on daughterboard that adds a SCSI interface to standard IDE drives. You could save a lot of money!

PROFILE: NEOTERIS

Location:	Sunnyvale, Calif.
Founded:	June 2000
Products:	EmployeeAccess and PartnerAccess SSL proxy server hardware/software.
Founders:	Sam Srinivas, Theron Tock, Shyam Davuluru and Surya Koneru.
Financing:	\$5 million from private investors and The Barksdale Group.
Competitors:	Aventail offers services based on similar technology; competes with certain aspects of VPNs.
Fun fact:	Most of the founding team comes from Healtheon/WebMD.

Neoteris

continued from page 23

scheme also resembles IP Security remote access VPNs, in which client software on remote PCs make secure IPSec links over the Internet to a VPN gateway at a corporate site.

But one key difference is that Neoteris' method doesn't require distributing a special software client to remote users. All the software they need comes with their Web browsers.

This makes the Neoteris gear better suited than VPN equipment to support remote users who primarily use remote access for reading their e-mail, says Tim Dorian, network security manager for 3Com, who is beta-testing Neoteris gear.

"With the VPN, there's always the issue of distributing clients, or if there are changes to VPN policies, then there's new software to distribute," Dorian says.

The Neoteris equipment also extends secure remote access to handhelds that are equipped

with browsers, he says. For handhelds to work with VPN gear requires a separate client that is different from the clients used on PCs, creating more management complexity.

Dorian says the security of SSL is not an issue.

"If it's good enough for your online bank, it should be good enough to read your e-mail," he says.

Dorian says Neoteris' secure access is also good for pulling down files to local machines. Neoteris says its gear supports any Web-based application, and next year will support telnet sessions and terminal-emulation applications.

Neoteris gear does not support file sharing, so multiple users cannot access a file at the same time to collaborate, Conover says.

Neoteris EmployeeAccess costs \$15,000 to \$65,000, depending on the number of users, and PartnerAccess costs \$30,000 to \$100,000. They are available now.

Neoteris: www.neoteris.com

Content

continued from page 23

support the standards. But at the moment the standards have no bearing on the business."

Meanwhile, Content Bridge, launched its peering service in January, with companies such as Inktomi and AOL Time Warner touting the advance in sharing content across multiple networks. However, the effort seems to have stalled, in part because of the tricky politics of deciding who adds what value to the virtual network and as a result deserves what level of compensation.

Neither AOL nor Inktomi would comment on where things currently stand with Content Bridge. Exodus Communications, which reportedly had halted plans to offer the service, also did not respond to requests for comment for this story.

At the same time, Content Bridge's only resellers, Adero and Madge.web, have gone out of business, and Merriweather says Digital Island's CDN customers are the only customers using Content Bridge-developed technology today.

Apparently Content Bridge has become nothing more than an extension of Digital Island's peering strategy, says Melanie Posey, program manager of Web hosting at market research firm IDC.

"Content Bridge has become Digital Island, which has become Cable & Wireless. It's not a bridge anymore; it's part of a subsidiary of a global [telephone company]," she says.

"What Digital Island wants to do is expand its network by reeling in new partners instead of going out and deploying

servers everywhere the way Akamai [Technologies] does," she says.

It was Akamai's approach, in fact, that initially spawned the idea of Content Bridge: to enable caching vendors and Internet service providers to get more out of their existing networks. The thought was that by banding together, those vendors and service providers could level the playing field.

But, while Content Bridge idles, Akamai's network continues to grow. The CDN now has more than 13,000 servers in more than 1,000 networks in 63 countries.

"Content Bridge was just a way for all the other players who had been eating Akamai's dust to band together and get big enough to fight Akamai on a more or less equal footing," Posey says. "Now many of the content delivery providers have flamed out and the rationale has kind of disappeared."

In addition, CDN service providers such as Speedera Networks, Mirror Image and Akamai are focused on enterprise customers, many of whom opt to build their own CDNs, diminishing the need for peering. A study by HTRC Group found the demand for streaming would prompt this trend toward home-grown CDNs.

The study found that 35% of companies do streaming and that 42% of them will in 2002. Of companies doing streaming, more than half will build their own CDNs rather than outsource, the study says.

Nevertheless, analysts say the idea behind Content Bridge is still viable, especially for major

telecommunications companies looking to get more revenue out of their networks, but the hurdles are many.

"In the beginning it was easy to get people to agree on the alliance because no one was making money," Christy says. "Suppose the thing started to be a way to make money. The questions are how do you divide it up, how do agree on who contributed what value to the equation and therefore how is the dime going to be divided?"

Even Digital Island is focusing more on its private peering efforts than on Content Bridge. Although Merriweather says the group plans to open itself to other caching vendors to make Content Bridge more attractive to service providers that may have incorporated non-Inktomi caches.

Still, Merriweather acknowledges that the most important focus for Content Bridge these days is its joint effort with Content Alliance in creating open standards and protocols for content delivery. Not that Content Alliance hasn't had its share of problems. Its newest member, NetVoice, joined in March and filed for Chapter 11 bankruptcy protection in October.

Overall, analysts say, neither group has had any real impact on the CDN world to date.

"At the moment, if you had to give [Content Bridge] a grade against original expectations, it would be at best only a D-minus," Christy says. "It's still around, but it doesn't seem to have done anything."

Content Bridge: www.content-bridge.com; Content Alliance: www.contentalliance.org

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Special Focus

VPN STANDARDS: While the bulk of VPN features have been agreed upon, security improvements are in the offing.

Standards work should reinforce VPNs

■ BY TIM GREENE

The adage that time stands still for no man could hold true for VPNs, where a host of proposed standards will help make the technology more efficient and secure in the future.

Within the Internet Engineering Task Force (IETF), proposals abound for tinkering with the complex, multifaceted IP Security (IPSec) standards that spell out how to establish secure VPN connections over the Internet. These VPNs require ways for users to authenticate themselves, for traffic to be encrypted and for verifying that no one has tampered with traffic being received.

Perhaps the most anticipated standard proposal is called Just Fast Keying (JFK), which would replace Internet Key Exchange (IKE), the standard for negotiating VPN sessions and managing encryption keys that are used in each VPN session. (JFK is an acronym, but the name also stems from the fact that JFK succeeded Ike as U.S. president.) Some fear IKE is so complicated that it may be insecure.

While it is widely used among IPSec VPN vendor equipment, the IETF acknowledges IKE could have potential security flaws, at least in theory, even though no specific flaws have been exploited.

JFK would perform the same functions as IKE, but would be simpler, thereby opening it up to fewer threats. It is being developed by a group, many of whom work at AT&T Laboratories, but has not yet been publicly proposed. At the IETF meeting last summer, the group said it would have the technology ready sometime this year. Drafts of JFK are rumored to be circulating, and it could be ready when the IETF meets in December in Salt Lake City.

Like IKE, JFK would orchestrate the exchange of encryption keys between VPN gear. Unlike IKE, it would do so with fewer messages. This streamlining could make access to busy VPN sites noticeably faster, says Paul Hoffman, director of the VPN Consortium that has been following JFK, and a *Network World* columnist.

Less sweeping than JFK, a proposal called pre-IKE credential (PIC) protocol would make it simpler for companies to adopt digital certificates, the only way to authenticate VPN remote access users that meets the IPSec standard. Letting corporations adopt digital certificates gradually can save them time and expense, up to \$180 per user, according to the Gartner. Rather than switch to digital certificates all at once, companies could keep their current authentication methods opera-

VPN standards development

A plethora of proposals are currently making their way around the IETF to make VPNs more secure. Here's a sampling of some major proposals.

Proposed technology	Function
Just Fast Keying (JFK)	Simpler way for negotiating VPN sessions and managing encryption keys that are used in VPN sessions.
Pre-IKE credential (PIC)	Protocol would make it simpler for companies to adopt digital certificates.
Advanced encryption standard (AES)	A lightweight encryption algorithm for securing VPNs.

tional as they migrate users to digital certificates a few users at a time.

Use of digital certificates requires a public-key infrastructure (PKI) for exchanging the digital keys used to authenticate the certificates. Because implementing PKI is quite complex, it is easier to phase in the use of digital certificates gradually, leaving legacy, non-IPSec authentication methods such as Remote Authentication Dial-In User Service (RADIUS) and RSA Security's SecurID tokens in place at the same time.

There are other schemes, such as extended authentication and hybrid authentication, besides PIC that VPN vendors already use, but they have stalled in the standards process. Part of the reason they are bogged down goes back to the controversy over IKE. Extended and hybrid authentication require changes to IKE; PIC does not.

As a practical matter, vendors are implementing and advocating ways to handle legacy authorization and digital certificates that intrude into IKE. For instance, Nokia supports an alternative technology called challenge/response authentication of cryptographic keys (CRACK). CRACK also allows using RADIUS servers and secure tokens for authentication while supporting digital certificates. But it injects itself as part of the IKE protocol, which makes it unacceptable to some VPN experts.

The PIC proposal has received comment from IETF members and could be moved out of an IETF working group soon, which would put it on the formal track toward becoming a standard.

While the IETF considers these suggestions, an encryption standard awaiting U.S. government approval will deliver a lightweight encryption algorithm for securing VPN links. Called Advanced Encryption Standard (AES), it encrypts data in one step as opposed to Triple-DES encryption, which takes three steps. Triple-DES encrypts using the Data Encryption Standard algorithm, re-encrypts it and then encrypts it again, eating up processor cycles.

AES is harder to break than Triple-DES, but in a practical sense Triple-DES is plenty secure. It would take 4.6 billion years to break it with a computer that is far faster than anything available today. AES would take even longer (see graphic, below), according to the National Institute of Standards and Technology (NIST), which sets standards for the federal government in a range of areas.

But the more desirable characteristic of AES is the streamlined way it computes encryption keys, says Paul Serrano, a senior product development manager at NetScreen Technologies, the first VPN vendor to support AES. This "computationally less-intensive algorithm" means devices with relatively weak processors can still use this strong encryption without forfeiting as much speed as Triple-DES would eat up.

Notably, handhelds, which have relatively weak processors, would benefit from AES, Serrano says.

NIST has designated an algorithm known as Rijndael (pronounced "rain doll"), after the names of its creators, as the winner of a competition to design AES. Once NIST approves it for use by federal agencies, it will become the official government AES standard. That status should encourage vendors to incorporate it in their products, Serrano says.

NetScreen acknowledges the AES capability will be used initially for interoperability testing with other vendors. As it comes into common use, NetScreen says it will make custom processors to speed AES encryption.

Separate from encryption, the IETF is also close to an agreement on a way for IPSec software clients to work with any IPSec VPN server even if the VPN traffic has to cross corporate firewalls. Firewalls perform network address translation to shield private IP addresses from the Internet, but NAT also blocks IPSec connections. Individual vendors have worked around this, but a standard would make it easier to build corporate VPNs using equipment made by many vendors.

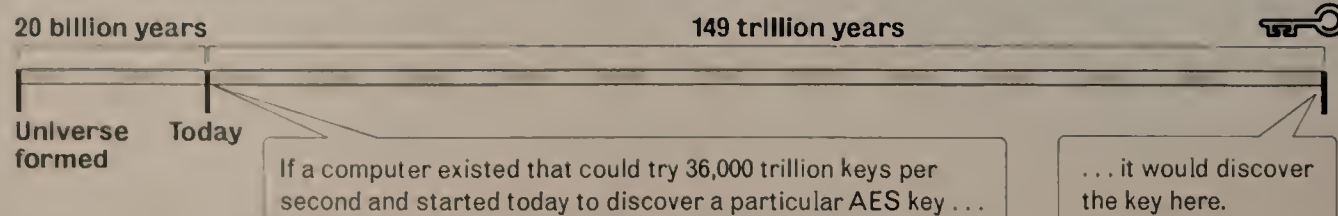
Two NAT proposals could come out of the IETF's IPSec remote access working group next month, putting them on the formal track to standardization, says Hoffman, who is also the committee's chairman. One proposal defines how clients and servers determine if there is a device in between them that is performing NAT. The other spells out how to get around the problem.

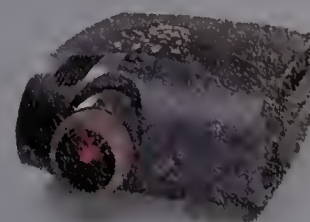
The latter proposal calls for wrapping up VPN traffic inside User Datagram Protocol (UDP) packets that can traverse NAT devices without being rejected by VPN equipment. These proposals might be finished in time for the December IETF meeting, Hoffman says.

While standards processes are often painfully slow, they are the established way to bring about improvements that will make VPN gear more efficient and interoperable. ■

That's strong encryption!

Advanced Encryption Standard (AES) is about to be endorsed by the U.S. government. Even in its weakest form it is not likely to be cracked by brute force anytime soon.





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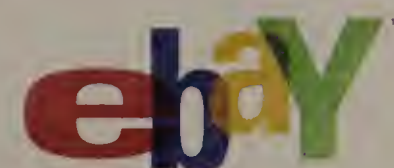
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Enterprise Applications

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Package simplifies application integration

■ BY JENNIFER MEARS

SAN FRANCISCO — Salesforce.com, an application service provider that delivers customer relationship management software designed for the Web, will roll out an updated version of its software early next year that will help customers more easily share data between back-end systems.

The Enterprise Edition, which will be

available Jan. 24, will use an XML gateway to let users link it into other enterprise applications, such as order management and databases, so that real-time data can be shared between systems. Today, Salesforce.com customers must do batch-jobs to move data between the CRM application and other systems.

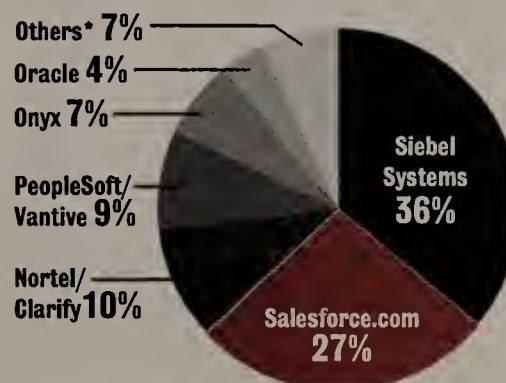
The Enterprise Edition also will feature enhanced customization capabilities, such as the ability to create input fields to meet the needs of different business units. Users can create unique page layouts for different departments or sales teams. The Enterprise Edition includes enhanced administration capabilities so users can implement permission-based access and provide different levels of control to different administrators to better manage large sales teams.

Salesforce.com originally targeted small and midsize businesses but has seen a increase in demand from larger companies that are shying away from complex and costly CRM implementations. The ASP's customers include Adobe, Textron Fastening Systems, Texas Instruments and BroadVision.

Analysts say the CRM trend is growing as

Taking its share

A report from Morgan Stanley recently listed Salesforce.com No. 2 in the CRM market based on number of customers for the first half of this year:



Based on survey of 10,491 customers.

*Includes SAP, Pivotal, Chordiant, Invensys (Baan/Aurum), Dendrite

larger businesses look to Web-native ASPs such as Salesforce.com and Upshot.com.

"What I'm hearing from all these Web services customers, not just Salesforce customers, is, 'I just couldn't stand the thought of going through another big implementa-

tion process with traditional software and spending lots of money and maybe not having the salespeople use it. This looked like it would do at least most of what I needed to do,'" says Laurie McCabe, vice president and service director at Summit Strategies. "It was an easier cost of entry and not a lot of risk if they didn't like it."

However, to retain those larger customers, Web-native ASPs must provide additional functionality bigger businesses demand.

Putnam Lovell Securities signed on with Salesforce.com about a year ago, with the understanding that an XML API would be developed so other systems could be easily linked with the Salesforce.com software. Putnam Lovell has used screen scraping to share data between Salesforce.com and other systems, says Rodric O'Connor, the company's vice president of technology.

"We've been waiting for this functionality," he says. "That was very important to us — the XML API."

Professional Edition costs \$65 per user per month. The Enterprise Edition is \$125 per user per month and is available now to premiere program members.

Salesforce.com: www.salesforce.com

Short Takes

■ **IBM** last week said it would purchase customer relationship and supply-chain management software company **CrossWorlds Software** for \$129 million. IBM and CrossWorlds have been integration partners for four years. IBM intends to absorb CrossWorlds technology into its software group, then market and sell CrossWorld products with a joint salesforce under WebSphere. CrossWorlds makes integration software targeted at industrial manufacturing, process manufacturing, financial services and telecommunications. www.ibm.com

■ Antivirus software vendor **Sophos** last week announced **Sophos Mail-Monitor for Notes/Domino**, a gateway virus-detection product for Lotus Notes/Domino 4.5, 4.6 and 5.0. MailMonitor can scan Notes databases for viral attachments. Mail-Monitor, which runs on Windows NT or 2000, costs \$60 for a 10-user license. www.sophos.com

■ **IBM** recently announced its **WebSphere Voice Server 2.0** now features a tool kit that lets businesses add voice to their applications and tools to prototype VoiceXML applications on a PC. The software supports languages including American- and British-English; Chinese; French; German; Italian; Japanese; and Spanish. It will be released next month for \$15,000 per processor plus \$3,000 per language.

Upgraded database makes the most of XML

■ BY JOHN FONTANA

REDWOOD CITY, CALIF. — Ipedo is beefing up its native XML database to let companies gain more management control over XML data for their Web-based applications.

The Ipedo XML Database 2.0 is designed to handle XML — a language to describe data — in its native format, thereby speeding access to data by eliminating the need to transform it into the rows and columns of a standard relational database.

Experts say XML databases will serve in a complementary role to traditional databases especially as XML becomes prevalent. Nearly 85% of large corporations are expected move all their Web-based content to XML over the next three years, according to the Meta Group.

Ipedo's upgraded database

features the ability to read large XML documents, search the tags and text contained in documents, transform XML style-sheets within the database, and search for images.

"XML documents can become megabytes long with strings of text and tagged with XML," says Rob Perry, an analyst with The Yankee Group. "The XML documents have a hierarchy, and you want to keep that hierarchy intact so you can dig down into it to search."

For example, companies could store chapters of product catalogs as complete documents for quick search without having to carve the information into separate XML documents. "The handling of large documents is something other XML databases can't do yet," Perry says.

Ipedo's software competes with XML databases from

Software AG, Ixiasoft, Excelon, XYZFind and NeoCore.

Ipedo also is adding free-form search, which lets users ferret through the text that falls between XML tags, providing a much more comprehensive look into a document. The database also takes on the burden of transforming XML into formats needed for applications. For example, the same catalog information can be transformed on-the-fly into HTML or wireless formats based on the client device.

"Data transformation can be a big drain on applications because it is so CPU-intensive," says Tim Matthews, president of Ipedo. Matthews says the company also will build support into its query mechanism for Xquery, a standard XML-based query language that the World Wide Web Consortium should finalize by year-end.

In addition, the database supports searches for Scalable Vector Graphics, an XML-based graphics format, and can be used to create a virtual view of XML data stored across databases within a company.

The XML Database 2.0 is priced at \$29,000 per CPU. It runs on Windows 2000 and NT, Solaris and Red Hat Linux.

Ipedo: www.ipedo.com



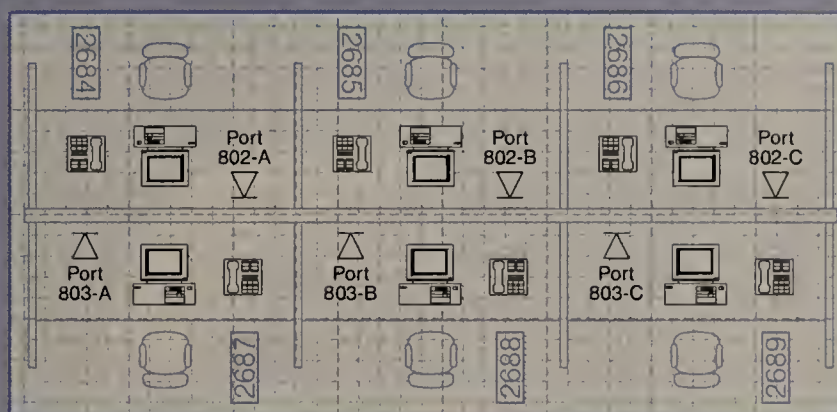
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That future was a thing of the past

The demise of Sprint's Integrated On-demand Network service has finally been accepted by all concerned, though it has taken a very long time.

Sprint launched ION in June 1998 with great fanfare, after which it quickly disap-

peared as far as most of the world was concerned. Apparently Sprint has been busy behind the scenes shoveling money into ION all this time, as much as \$5 billion according to the *Network World* obituary (www.nwfusion.com, DocFinder: 6728).

I wrote about ION in 1998 when it was first announced and was not too positive about its prospects: "It is far from clear if Sprint will be able to actually make a go of ION . . ." ("Is Sprint doing it again," www.nwfusion.com, DocFinder: 6730). Because ION was based on ATM to the customer, I mostly dismissed the possibility of anything technically viable coming of the effort, but some of the nontechnical aspects were interesting.

Particularly interesting was Sprint's plan to move away from minute-based phone billing to billing based on the amount of data sent, whatever the application. That may still happen, but not because the carrier decides to offer voice service on a per-bit rather than a per-minute basis. It will happen because users will just use their

... I don't think the root cause of the ION failure was the threat of SIP. I think it was . . . telephone company mindset.

Internet connectivity to replace their current wired phone service and the carrier will not be able to tell what is going on.

I expect it's just a coincidence, but Sprint announced it was giving up on ION a week before Microsoft's introduction of Windows XP, which, with its built-in Session Initiation Protocol (SIP) support, will make this type of call-around much easier.

SIP is the IETF's multimedia signaling protocol, as defined in RFC 2543 (www.ietf.org/rfc/rfc2543.txt). SIP is getting a lot of traction in the IP-telephony world these days. In addition to XP, SIP-based Ethernet-connected phones and telephony servers are on the market. SIP has the potential to significantly affect the traditional phone world by enabling individuals and companies to easily bypass telephone service providers.

But I don't think the root cause of the ION failure was the threat of SIP. I think it was mindset. Specifically, it was telephone company mindset.

In the case of ION, this mindset manifested itself as services based on circuits — ATM virtual circuits to be specific. The Internet has proven again and again that application-specific circuits are not needed and just add technical and managerial complexity, and thus cost. A few million people running SIP-based voice applications will show this yet again. I wonder if anyone in telco-ville is listening.

Disclaimer: Managerial complexity at Harvard? Say it's not so! Anyway, the above prediction of the past is mine alone.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco.com.

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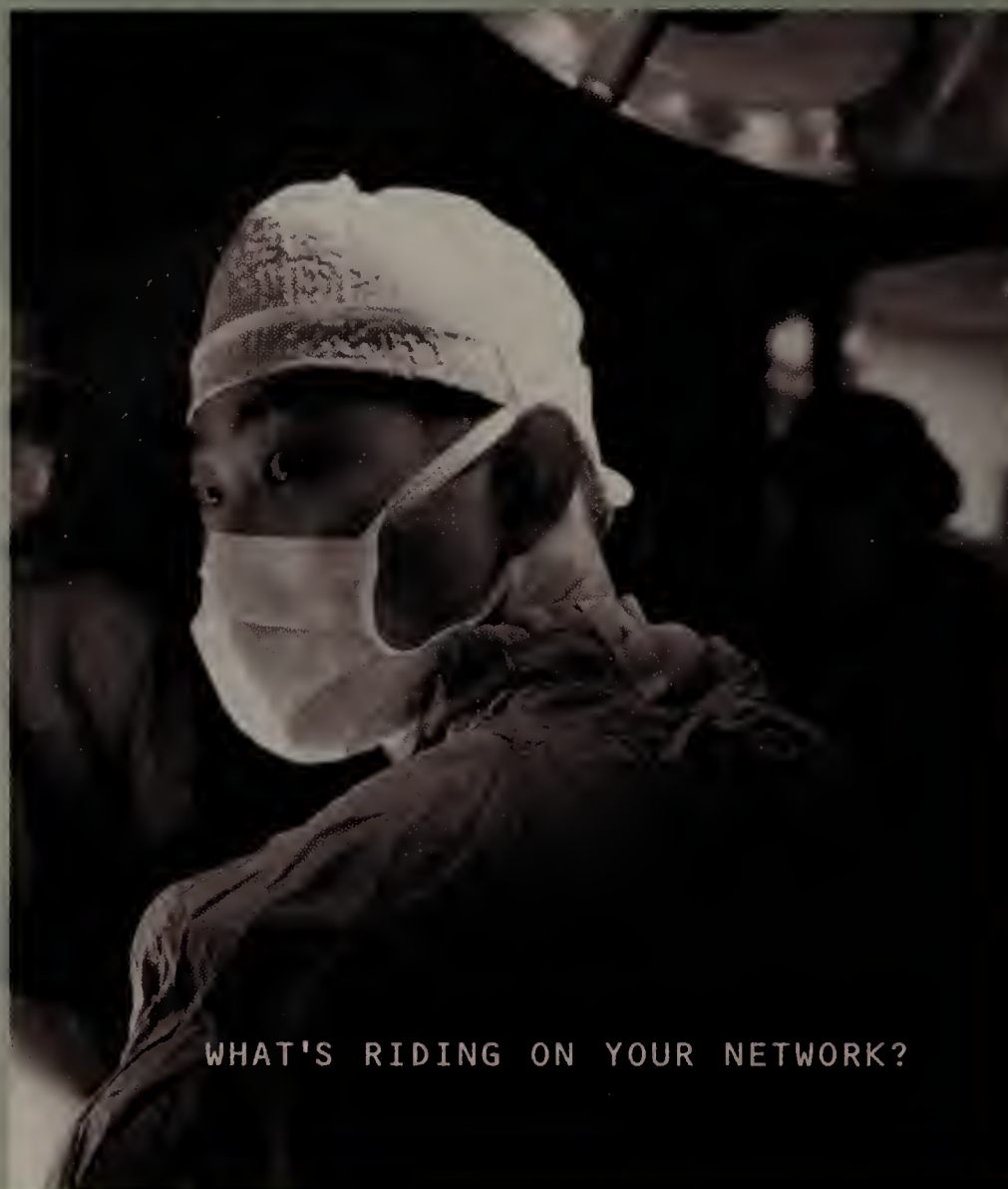
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Short Takes

■ **Cingular Wireless**, a joint venture between **BellSouth** and **SBC Communications**, last week announced plans to upgrade to 3G wireless technology by 2004. The majority of Cingular's network is based on Time Division Multiple Access, but it has already upgraded part of its network to Global System for Mobile Telecommunications (GSM) and General Packet Radio Service (GPRS) in five markets. By the end of next year Cingular expects to have half of its network upgraded to GSM and GPRS. The upgrade to GPRS increases wireless data speeds from 14.4K bit/sec up to about 144K bit/sec. When Cingular upgrades to Enhanced Data for Global Evolution, the wireless service provider will support 3G wireless data transmission speeds up to 384K bit/sec. www.cingular.com

■ Optical networking provider **GiantLoop Network** and **Compaq** reached an agreement last week in which the companies will team to build storage-area networking systems for enterprise customers. Compaq brings its StorageWorks storage systems and Data Replication Manager software, used to replicate data between local and remote locations, to the partnership. GiantLoop provides expertise in designing, building and managing optical networks.

■ Web hosting company **Digital Island**, a subsidiary of Cable & Wireless, last week announced it is teaming with **EMC** to offer new managed storage services that can be quickly implemented and scaled to meet business demands. The storage offerings are part of Digital Island's 2Way Web Services, a set of modular hosting and content distribution components that can be assembled on the fly and are priced on a per-use basis. The new managed storage modules include EMC Symmetrix networked information storage and software. Digital Island will locate EMC-based storage services in its global data centers and provide around-the-clock support.

Fixed wireless takes some lumps

■ BY DENISE PAPPALARDO

The recent announcement by AT&T Wireless that it's closing its fixed-wireless operations — on the heels of Sprint scaling back its plans in that arena — is the latest indication that this may be a broadband access technology ahead of its time.

Observers say that product technology in the works will greatly reduce the cost of providing fixed-wireless services and enable new service features, both of which are needed for carriers to justify the delivery of such services across the rural regions typically targeted. But they say it's unlikely this technology will be solid for a few years.

"Service providers would rather roll fixed wireless out when they have a more cost-effective architecture, and that's still in flux," says Maribel Dolinov, senior analyst at Forrester Research.

All of this helps explain why AT&T Wireless is subjecting itself to a \$1.3 billion write-down of its fixed-wireless business rather than trying to keep it going. The company says continuing to operate and expand its Digital Broadband business would just be too expensive.

Unlike other fixed-wireless providers, such as Sprint and WorldCom (which con-

tinues to forge ahead with its fixed-wireless plans), AT&T Wireless targeted only residential users with its 512K bit/sec Internet access service. The digital broadband offering attracted 47,000 users, most of them consumers, with a smattering of small office/home office users included. The service runs over the company's PCS 1900-MHz spectrum and its Wireless Communication Service spectrum in the 2305-MHz to 2320-MHz and the 2345-MHz to 2360-MHz ranges.

The idea was to offer customers a last-mile alternative when they were not on AT&T Broadband's cable network or DSL could not be provisioned, Dolinov says.

But clearly this was an AT&T Corp. initiative. AT&T Wireless, now separated from its parent, does not have the same last-mile concerns. While the company says this is a bittersweet cut, AT&T Wireless officials are also quick to point out that digital broadband is a nonstrategic business.

It's taking too long to locate towers, installation costs have gone up and AT&T Wireless has not been able to improve backhaul provisioning with the incumbent local exchange carriers, which "exacerbate costs," says John Zeglis, CEO at AT&T Wireless.

On the bright side, AT&T Wireless will be

Fixed-wireless usage doesn't stack up

There are only thousands of fixed-wireless users today compared with millions that subscribe to DSL and cable-modem services.

Fixed-wireless users:

87,000

DSL users:

2 million

Cable-modem users:

3.6 million

SOURCE: FEDERAL COMMUNICATIONS COMMISSION AND THE YANKEE GROUP

able to reclaim PCS spectrum in San Diego and Dallas that is being used to support its fixed-wireless services sooner than expected. The company needs this spectrum to deploy 3G mobile wireless technology. ■

'Patriot Act' aids law enforcement

Law steps up surveillance on hackers, but adds checks on Carnivore.

■ BY GEORGE CHIDI JR.

Under the newly enacted Patriot Act of 2001, ISPs and network administrators may give law enforcement agents access to their networks without a warrant in order to track hacker activities.

Law enforcement may not compel an ISP to grant access without a warrant, but under previous law designed to protect user privacy, ISPs were specifically forbidden to grant network access without customer permission or a judge's order.

Agents can monitor hackers without a warrant, but cannot monitor an ISP's bill-paying customers without one. Even if a customer is engaged in illegal activity,

law enforcement must get a pen register — a judge's authorization equivalent to what's needed for reading incoming and outgoing phone numbers — to track the user's Web surfing habits and e-mail addresses, and a wiretap warrant to read e-mail or monitor other communications.

In addition, the U.S. attorney general is required to report semi-annually to Congress on its use of the so-called Carnivore e-mail and Internet surveillance system, renamed DCS 1000.

The law requires agencies keep a record of who installed e-mail taps, when and for how long, how Carnivore was configured

and what was recorded.

Carnivore can be used only after a judge signs a pen register, and the records must be given under seal to a judge 30 days after the court order for e-mail filtering expires.

For agents to tap without a warrant, an ISP must own its network, law enforcement must be involved in a lawful investigation, and only the suspect's communications can be intercepted. While the police must have "reasonable grounds to believe that the contents of the computer trespasser's communications will be relevant to the investigation," the law is not specific to hacker terrorists and can be applied to any computer crime investigation.

ISPs are not compelled to furnish facilities or technical assistance without being "reasonably compensated."

See Roundup, page 34



REGULATORY ROUNDUP

EYE ON THE CARRIERS

Johna Till Johnson



Many network managers are considering using IP VPN as enhancements for — or even replacements to — conventional frame relay or ATM WAN services. IP VPNs have advantages, particularly flexibility, dynamic bandwidth and the ability to provide secure connectivity to outside organizations. But not all IP VPNs are created equal.

There are different techniques for delivering these services, each with a unique set of advantages and disadvantages, and each type is appropriate for a different user scenario. Before signing off on an IP VPN, network managers should be sure they understand the pros and cons of the

Know what you are getting with your IP VPN

architecture they've selected.

Here are some of the major categories:

- Customer-premises based, user-defined IP VPNs. With this type, a network manager deploys customer-premises-based equipment (such as from Check Point Software or NetScreen Technologies) that creates and maintains secure tunnels across any provider's IP network (or even the Internet).

The primary advantages to this approach are flexibility — because users aren't limited to a single provider's network — and security, because these VPNs typically rely on highly secure encryption protocols, such as IP Security (IPSec).

The primary disadvantage is service quality because traffic may travel across multiple networks. Even when such products are deployed across a single provider's IP network, the provider typically is not aware that the traffic comprises an IP VPN, and provides it with the same "best effort" service quality as it offers any other IP traffic. This type of VPN is best suited for corporate

WANs in which the primary traffic type is noninteractive, and as for general extranet connections (such as providing links from one company to another).

- Customer-premises based, service provider-defined IP VPNs. This approach is similar to the previous one, in that IP VPN devices reside at the customer premises. However, in this case the devices are deployed and managed by the service provider, which promises an improved quality of service for the customer's IP VPN traffic.

The catch is that there's a direct trade-off between service quality and flexibility. No service provider of which I'm aware will offer to install and manage an IP VPN device that connects to another service provider's network. So in this scenario users lose some of the flexibility they had with the previous one.

This type of VPN is best suited for corporate WANs with a moderate to considerable amount of interactive traffic, or for extranets with a clearly defined set of

players — for example, links between financial services entities.

- Network-based IP VPNs. In this scenario, a provider creates and maintains IP VPN tunnels within its network. These can be either IPSec or Multi-protocol Label Switching tunnels, or both, and typically rely on products from the likes of Cosine and Shasta to create the tunnels.

These VPNs are easier for service providers to configure and manage than other types of VPNs, and are generally suitable for the same set of applications as the previous scenario. However, there is one catch: Network-based IP VPNs don't always use encryption. So if users are seeking highly secure connections, this approach may not be an ideal fit.

Johnson is senior vice president and CTO for Greenwich Technology Partners, a network consulting and engineering firm. She can be reached at johna@greenwichtech.com.

Roundup

continued from page 33

FCC may toss Bells a bone

The Federal Communications Commission in August started a market review of broadband services that by February could result in the FCC suspending so-called unbundled network element access rules as a means to spur faster broadband adoption, says David Rohde, an analyst with The Yankee Group.

The Bells had been backing the Tauzin-Dingell broadband bill, which would have allowed local providers to carry long-distance data traffic. With that bill basically dead, the FCC could turn to authority derived from Section 706 of the Telecommunications Act of 1996 to issue a forbearance of rules it believes hinder broadband rollout.

The Bells argue that the real broadband competition isn't between competitive local exchange carriers (CLEC) and incumbents, but rather it's between the Bells, cable Internet services

and wireless broadband.

Rohde doubts FCC Chairman Michael Powell will open long-distance data to the Baby Bells because of the predictable backlash from AT&T and other long-distance rivals.

However, he says the FCC might find that the Bells could speed up broadband if they didn't have to let competitors pick apart their network elements.

The separation of the Bells' network backbone gear from their last-mile connections to consumers creates a jumbled and inefficient mess in phone switching facilities, the Bells say. Competitors say dropping the network access rules would sacrifice local phone service competition for faster broadband rollout.

No hurry on Enhanced 911

The Oct. 1 deadline came and went for wireless service providers to meet FCC rules for Enhanced 911 services. Not a single carrier met the requirements. The FCC issued waivers for the lot, with some strong rebukes influenced by the events of Sept. 11. Carriers now are operating on a revised schedule to roll out the location-based services for emergency response personnel to find endangered callers. No carrier is expected to begin anything like broad implementation until the middle of next year.

Supreme Court might rule on local competition

The U.S. Supreme Court heard arguments on Oct. 10 between local phone service carriers and competitors over rules for local

competition pricing and network element combination.

Local carriers say the methodology used to judge how much competitors should pay for access to the network is unfair, and it uses historic metrics rather

than looking at future costs.

Competitors say the local carriers have been trying to price them out of business, asking the court to judge the Baby Bell's anti-competitive effectiveness by the CLEC "train wreck" of 2001.

The court has heard arguments but has yet to hand down a decision.

Chidi is a correspondent with IDG News Services' Boston bureau.

Services can save your data

Loudcloud's trio of options provides protection during a disaster.

■ BY JENNIFER MEARS

SUNNYVALE, Calif. — Companies looking to back up their Web sites in anticipation of a disaster — natural or otherwise — have new options from managed hosting provider Loudcloud.

Loudcloud recently rolled out expanded disaster-recovery services, which include a three-tiered package that relies on the hosting provider's modular Opsware automation technology and lets customers pick and choose the level of backup they need.

"There is no question at this point and time that there is a raised awareness of disaster recovery," says Carrie Lewis, an analyst with The Yankee Group.

But she says disaster recovery must go beyond simply saving data; it also must protect business processes.

"It's one thing to make sure your data is secure and that it's not going to be lost," she says. "But then how much time will it take to get things up and running again? Do you want a separate site running — a mirrored site — so there is no interruption in service, and how often do you want backups done?"

Those are the types of questions Loudcloud is letting its customers answer for themselves by offering Disaster Recovery Complete, Disaster Recovery Select and Disaster Recovery Distributed.

Disaster Recovery Complete provides customers with a standby site that is monitored and synchronized with the production site, essentially a mirror image of the main staging and production environment, so that when disaster strikes, a company's

Three-tiered disaster-recovery plans let customers choose the level of backup they need.

online businesses will be uninterrupted, Loudcloud executives say.

Disaster Recovery Select is for customers who don't need 100% of their Web sites up and running quickly, but would rather pick and choose critical applications that would be necessary. This site is fully maintained and synchronized with the main site.

Disaster Recovery Distributed is an "entry level" option for customers who can have their sites hosted into two geographically distinct data centers. If a catastrophe happens at one site, Loudcloud switches the environment in the other data center into full production.

The disaster-recovery services are priced as a percentage of a customer's existing site fees, which can range from tens of thousands of dollars per month to millions of dollars per month, Loudcloud says. Disaster Recovery Complete is priced at 70% to 80% of total site fees; Disaster Recovery Select costs 25% to 40% of total site fees, depending on hardware used and applications monitored; and Disaster Recovery Distributed ranges from 10% to 30% of total site fees.

Loudcloud: www.loudcloud.com

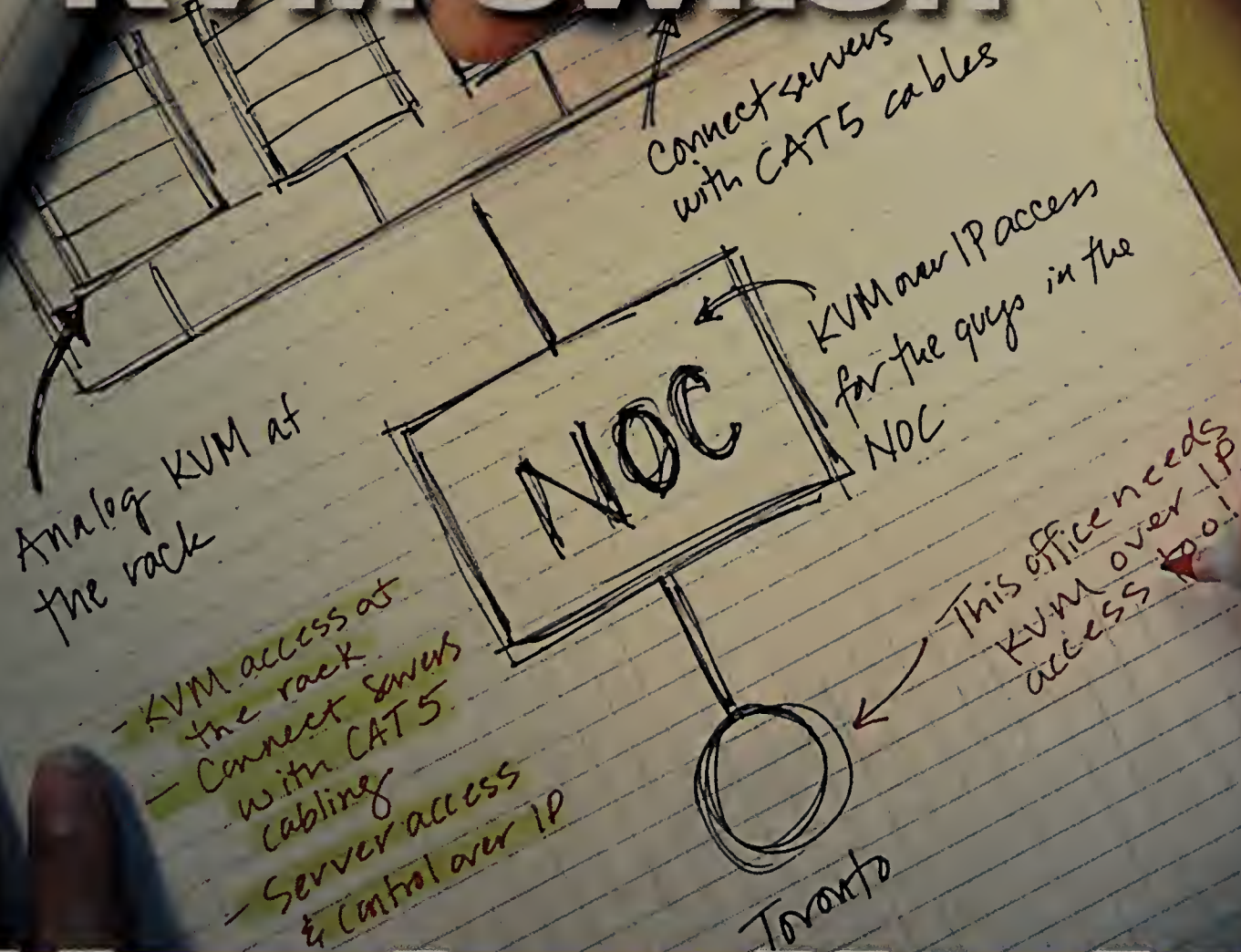


More online!

Read why there are concerns about the FBI's diagnostic software technology called Carnivore.

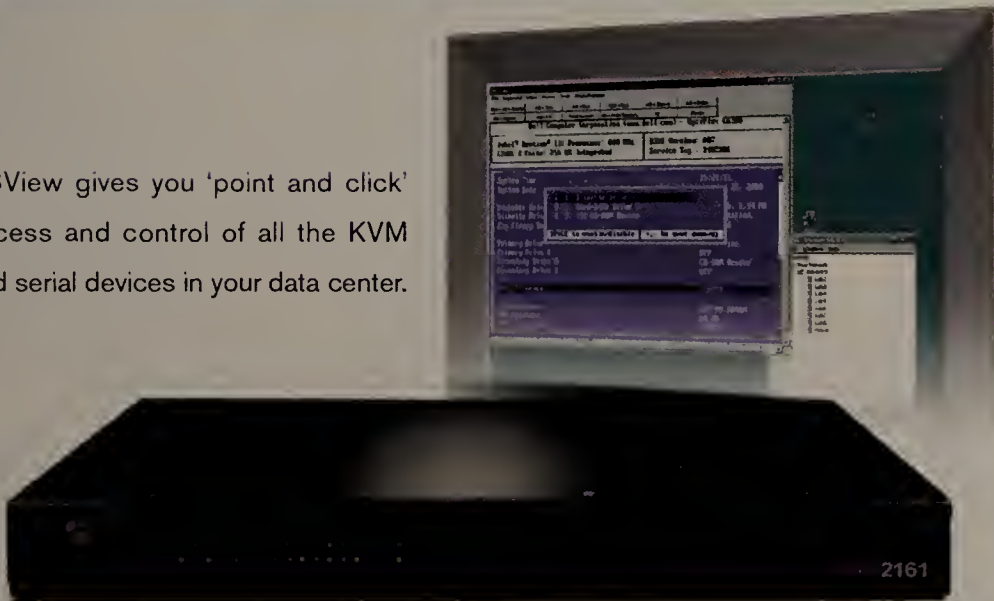
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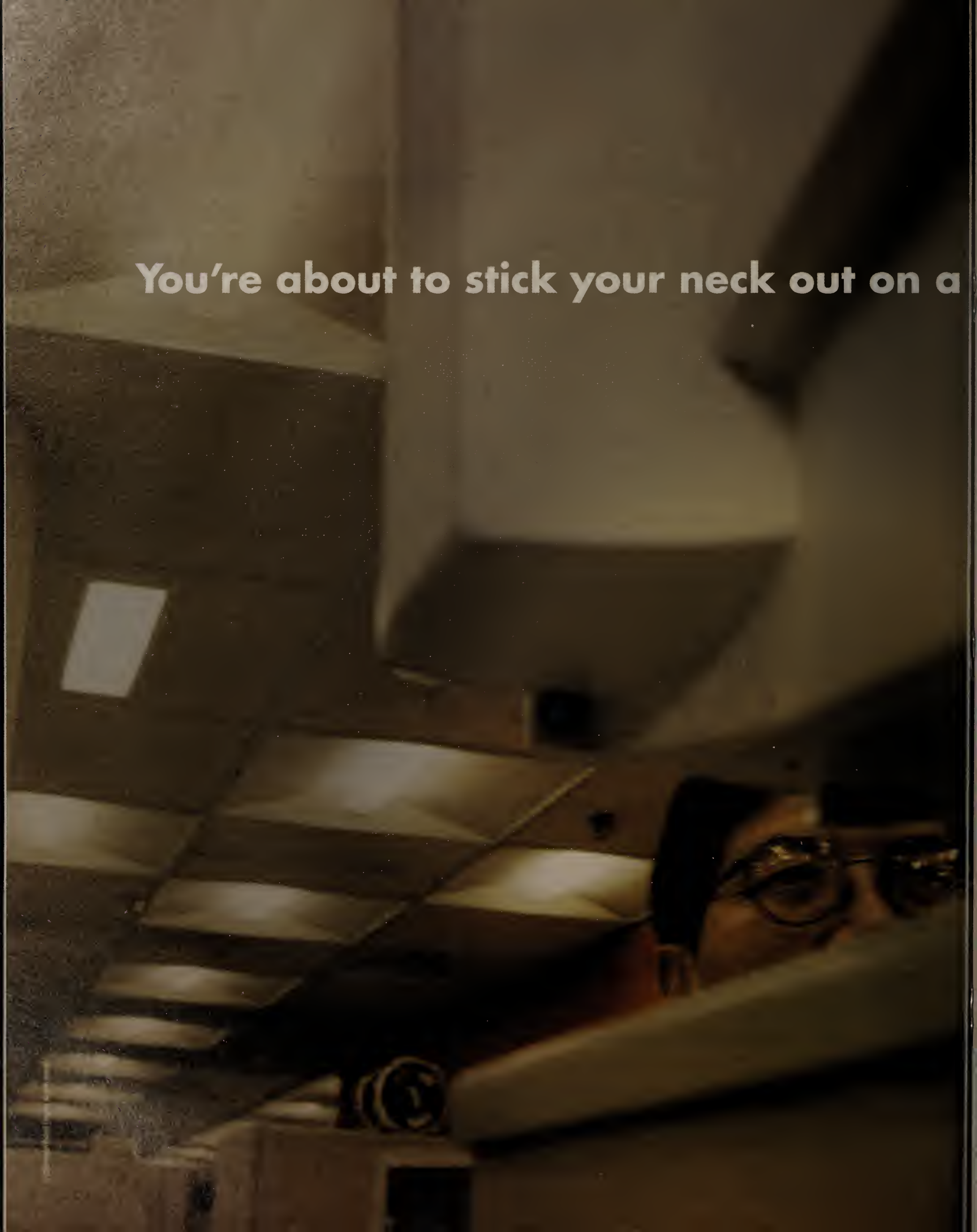


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■ SERVICE PROVIDER DEVELOPMENTS
AT THE JUNCTURE BETWEEN THE ENTERPRISE
AND THE NEW PUBLIC NETWORK

A Crossbeam CEO Peter George talks up big servers

Crossbeam's new CEO, Peter George, left Nortel after six years to head this start-up that's building a massive server platform to protect data centers and deliver network-based applications. George recently spent some time with Network World Senior Editor Tim Greene to discuss this emerging technology.



“Most enterprises, because security is so important, want to keep it in-house.”

Peter George
CEO, Crossbeam

How do you describe the category of product you make?

The intention of the product was the genesis of MCI saying, “We want to provide security services for our enterprise customers, and we have to rack and stack hundreds of servers to do it. We’d like to consolidate that so we can manage the

box better and save some money.” That’s what we set out to do a year and a half ago.

The (name) that resonates now with us is multi-gigabit network application concentrator. It’s really the evolution from the content switch and load-balancing products that we’ve seen in the last cou-

ple of years, such as the ArrowPoint product or the Alteon product. What this product is evolving to is really a consolidation point of all those different boxes into one single box that provides high performance, 3-to-10 Gigabit performance, five-9 (99.999%) reliability and tremendous availability for the network.

Isn’t it a little scary to put all that responsibility in one device?

In the carrier world, as long as you can build a five-9 reliable box, they’re not afraid of that at all. Most of the enterprises aren’t used to five-9 reliability, and they sure aren’t used to it at an affordable price. We’re going to provide that reliability at price points of 50 to 60 (thousand dollars), which is an order of magnitude

See Crossbeam, page 40

Takes

■ **Route control start-up RouteScience** last week announced shipment of **PathControl**, which lets service providers override Border Gateway Protocol route selection in multi-homed networks. The device determines the best path through the multi-homed ISP network and then enforces selection of this path on edge routers. RouteScience PathControl costs \$140,000 to \$250,000, depending on the device configuration. Entry-level pricing includes an eight rack-unit, 14-slot chassis and support for two ISP links. www.routescience.com

■ **NetTest** has announced the release of **Quest GPRS**, an IP-based protocol analyzer for wireless network operators. NetTest says the software can use an off-the-shelf General Packet Radio Service (GPRS) mobile phone to facilitate end-to-end IP quality-of-service testing. Quest is said to decode more than 250 IP protocols, including FTP and HTTP. It can be configured to work in portable and rack-mount configurations, and contains eight test interfaces in a single chassis. Pricing starts at \$30,000.

Boosting bandwidth over copper lines

G.shdsl gear from Symmetricom enables speeds above a T-1.

■ BY MICHAEL MARTIN

Symmetricom last week rolled out single-pair high-bit-rate DSL devices that are designed to let businesses bond several DSL lines together to fill the bandwidth gap between T-1 and T-3.

“There are many business customers leasing T-1 lines,” says Jon Cordova, an analyst with Infonetics Research. “The problem is a lot of those people are running out of bandwidth and can’t afford, or don’t need, a T-3.”

Businesses that can access fiber can upgrade their bandwidths by going with a metropolitan Ethernet service. The problem is that only about 3% of the small and midsize businesses in the U.S. have direct fiber connections, says Donald Skipwith, vice president of business development with Symmetricom.

Symmetricom’s new GoWide products let service providers deliver big bandwidth over copper rather than fiber. The GoWide Enterprise 15 Mbps is an integrated access device that bonds up to eight DSL lines together for a 15M bit/sec connection and also supports T-1 voice.

The GoWide IP 9.2 Mbps supports up to four bonded DSL lines for a 9.2M bit/sec link.

Competitive providers will likely be the first to roll out Symmetricom’s products, Infonetics’ Cordova says.

“The [incumbent local exchange carriers] don’t tend to do anything unless they’re forced into it,” he says.

While single-pair high-bit-rate DSL, also known as G.shdsl, has been slow to roll out in North America, Cordova says there

should be some significant deployments next year.

A number of providers have unveiled G.shdsl wares, but Cordova says Symmetricom is one of the first to roll out an option for bonding multiple lines into one larger connection.

In addition to the new GoWide models, Symmetricom ships the GoWide IP 2.3 Mbps and the GoWide 4.6 Mbps.

New market

Symmetricom has been around for many years producing network synchronization products, which still account for the majority of the firm’s revenue.

Recently, the company began branching into the DSL market. The company manufactures a DSL loop extender, known as GoLong, which boosts the distance from a central office that a DSL signal can travel.

In mid-October, Symmetricom acquired some assets and products from Telinax Communications. This acquisition is playing a key role in the development of the GoWide line.

The new GoWide products are available now and range in price from \$500 to \$10,000, depending on their functionality.

Symmetricom: www.symmetricom.com

Broadband bonding

Symmetricom’s GoWide boxes combine multiple G.shdsl lines to form one large pipe.



GoWide Enterprise 15 Mbps

- Interface for up to eight bonded lines
- Integrated T-1/T-3 data and T-1 voice
- 15M bit/sec burst rate
- ATM transport

GoWide IP 9.2 Mbps

- Interface for up to four bonded lines
- 9.2M bit/sec burst rate
- Inverse multiplexing over ATM transport

MPLS to make Ethernet resilient in metro?

Forum endorses specs to use labels to enhance reliability of LAN technology.

■ BY TERRI GIMPELSON

In an effort to make Ethernet "carrier-class" for metropolitan-area network deployment, the Metro Ethernet Forum is endorsing a technique that utilizes Multi-protocol Label Switching to enhance the resiliency and reliability of the LAN technology.

During meetings this week in Boston, the forum passed a motion to create specifications on use of MPLS labels to bring SONET-like restoration to Ethernet. MPLS, the forum says, can restore Ethernet in 50 msec or less in the event of a failure.

Forum officials are proposing two distinct ways of using MPLS with Ethernet to prevent delays in the event of a failure.

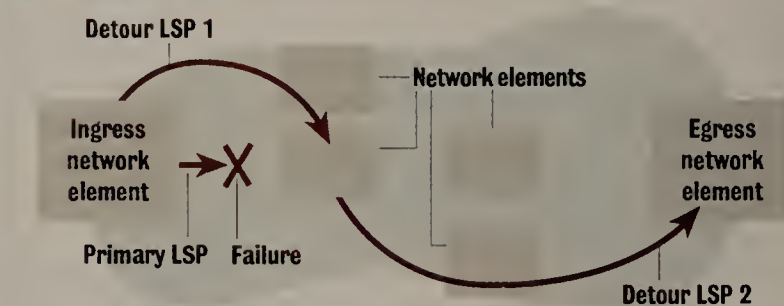
The first, called Aggregated Link and Node Protection (ALNP), addresses local network protection and makes use of MPLS Label Switched Paths (LSP). The second, called End-to-End Path Protection (EEPP), accommodates older network equipment that may not support MPLS.

Nan Chen, president of the forum, explains that Ethernet, by

MPLS beefs up Ethernet

MPLS labels can be used to steer Ethernet traffic away from failures in a metropolitan-area network and achieve SONET-like restoration. MPLS-enabled network elements activate a detour label switched path (LSP) to a destination network element if the primary LSP fails. Multiple MPLS labels and LSPs can be associated with a single Ethernet destination.

Metro Ethernet network



its nature, uses idle frame transmission to detect failures at the physical layer in a network. This, Chen says, can be done in millisecond increments using ALNP.

ALNP suggests encapsulating payload data in an MPLS label. The MPLS "packet" is then put inside an Ethernet frame for transmission. Each network element can read the MPLS labels and determine packet sequence be-

cause the MPLS labels remain unchanged, Chen says.

The destination address of the Ethernet frame lets packets be forwarded to the next hop, while the MPLS labels direct traffic end-to-end. When a fault is detected, the ingress network element automatically reroutes traffic from the primary LSP to a predetermined detour LSP en route to the egress network element.

Each detour LSP can also be

used as a primary LSP, Chen says. Bandwidth that would otherwise be reserved for bursting on the primary LSP would be used for detour traffic if there's a failure.

This way, no bandwidth is wasted, he says.

EEPP works much the same way ALNP does. It can be used to route traffic around a failed node or around one that doesn't support MPLS, which is its primary application.

In this case, the ingress network element sends out hello messages to determine which elements on the network do not support MPLS. The ingress network element sends traffic around the nonsupportive network element via the predetermined detour LSP tunnel and simultaneously sends the same traffic along a secondary LSP.

Depending on where the non-supported node is in the network, sending the traffic along the secondary LSP may speed rerouting, Chen says. The egress network element can determine within 20 msec which traffic to take during the TCP session.

However, this approach may take up to 10 seconds to reroute traffic, depending on how often hello messages are sent out and how many nodes are on the network, Chen says.

He also warns that this method requires half of the network's bandwidth to be reserved for protection, much like SONET.

Chen says EEPP should be reserved as a last resort for protection.

"The forum understands that the mechanism is there for 50 msec of protection," Chen says. "We also know that there has to be a transition period. As people come to know their options, we think most will want to implement 50 msec recovery and there won't be the need for EEPP."

Chen says MPLS-based protection will work on all topologies — ring, mesh or point-to-point. Chen also says MPLS-based restoration can also be applied to voice and video traffic.

Once traffic is encapsulated into Ethernet frames, he says, it

can then be prioritized.

The forum expects to release the first draft of its proposal at the next meeting, scheduled for January.

Despite the forum's enthusiasm for MPLS-based restoration, not all analysts are convinced that it is suited for voice and video traffic.

Michael Kennedy, co-founder and managing partner for Network Strategy Partners, says that this proposal, if approved, will certainly make Ethernet more viable in the metropolitan area, but doesn't have any near-term impact on voice services.

"There really isn't a business model out there that gets packetized voice down to where the regional Bell operating companies want to pay for it," he says. "Circuit-switched voice is just better."

Independent analyst Mary Petrosky agrees.

"I'm not sure about how this will affect voice," she says. "I don't know how they're going to shovel voice into Ethernet frames. For data, this is com-

“Sure this will help data, but there's still a clear benefit to voice traffic here too.”

Fred McClimans
Managing director, Fearless Ventures

Crossbeam

continued from page 39

less than what conventional companies do.

Will you try to sell to carriers or enterprises?

The high-end enterprise, the Fortune 200 and their data centers; people that have lots of e-commerce and Web traffic; transportation companies; big finance institutions, and Internet data centers — Exodus and others who provide services to customers.

So will companies buy your gear or will they buy services based on your equipment?

I think the future is going to be about enterprises having a combination of both. Most enterprises, because security is so important, want to keep it in-house. The small-to-midsize enterprises will probably outsource because they don't have the skills to do it in-house. The big ones will keep it in-house. Over time, as the security market matures and people become more confident in the rock-solidness of the software, that may change.

Who do you compete against?

The companies we see are Cisco, but also appliance companies like Nokia and Netscreen. They appear to be the three aiming at the space we're at. But they're aiming from different places, and we're aiming to a different place, which is the

high-end 10G bit/sec space, and none of them have the architecture to get there, so we think we have the advantage.

What start-ups are you watching?

Companies like Cloud Shield, Zuma and a whole host of others.

What applications will you put on this box?

We've just been talking about firewalls. The reason why we've been doing that is we've struck a relationship with Check Point. Our customers have said to us that the first thing they want is to secure their network with a high performance firewall. Our energy is around this first application, but clearly our plan is intrusion detection, denial of service, building a whole platform of security services that would sit on this box and really help our customers protect their networks.

What is the roadmap for Crossbeam?

Our first customer shipment is at the end of the year. The biggest milestones you will see over the course of 2002 are new applications that fit on the platform and they will include, in order of priority, intrusion detection and denial of service, ones that are critical for securing enterprise networks. Then we'll move into other applications like content management, storage or other things that are important. Three or four applications, not a dozen. ■

selling. MPLS is definitely the way to bring robustness and reliability to Ethernet."

Fred McClimans, managing director of Fearless Ventures and a *Network World* columnist, says voice will eventually come.

"Sure this will help data, but there's still a clear benefit to voice traffic here too," he says.

"This is still in its infancy, and I'm sure there will be future innovations that will improve voice services through the metro, but the forum had to address the fundamentals first, and I think they've made a reasonable step for wider implementation," McClimans says.

"The next logical step is for vendors to address interoperability issues," he says. ■



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Technology update

■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Web services can simplify Web apps

■ BY DAVID WELLER

Think of Web services as the middleware system you've always wanted. By using a standardized way to find and use your services (Web Services Description Language), you eliminate the need to write new interfaces each time you integrate with another middleware system.

However, the benefits don't stop there. By using a common protocol such as Simple Object Access Protocol (SOAP), you eliminate the need for the old "one adapter per protocol" mechanism. And by standardizing on a common way to find and use enterprise services (Universal Description, Discovery and Integration [UDDI]), you do away with manual point-to-point interfaces.

Eventually, you'll be able to use a form of "flow language" — that is, Web Services Flow Language — to describe your business processes in a software model, using nothing but Web services technologies.

Let's imagine that HugeTelco has a customer that wants a new feature, such as telemarketer blocking, added to a service. At the most basic level, the service request would be sent via a Common Object Request Broker Architecture (CORBA) interface into a C application that processed all requests. Then the C application would transmit three messages:

- One to the telemarketer-blocking activation system, which would communicate through proprietary XML messages with a

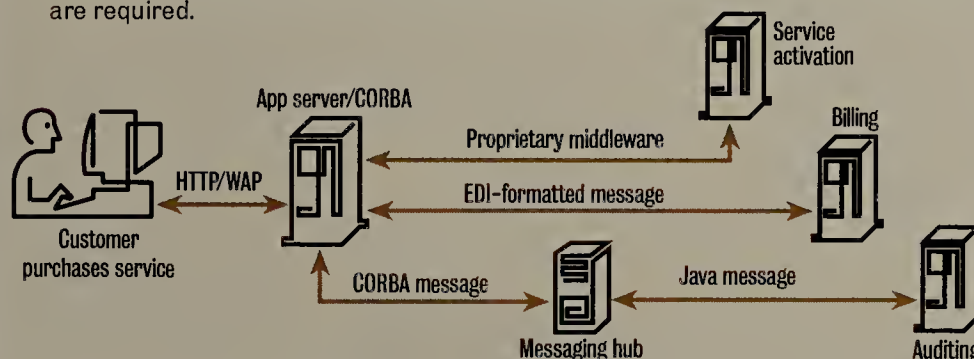
■ HOW IT WORKS

Web services

By using new standards such as Simple Object Access Protocol (SOAP), services can be delivered more simply than via traditional methods.

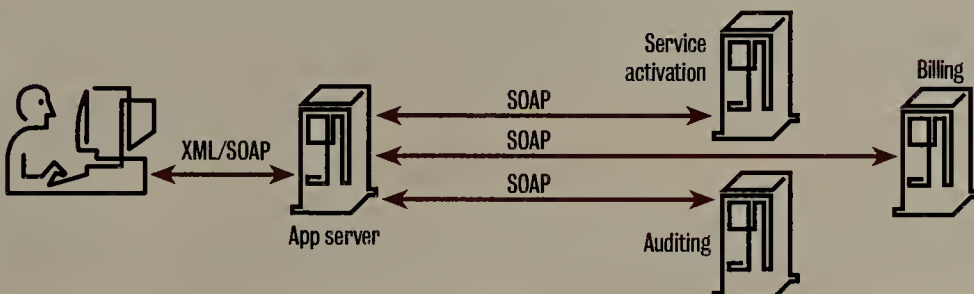
Traditional IT integration

1 In this scenario, the enterprise customer buys a new service from a service provider. With traditional middleware, five different messaging protocols and 10 interfaces are required.



Web services-based integration

2 Using SOAP and XML, only one protocol and four interfaces are needed.



commercial middleware system.

- Another message to a billing system, which would be a Powerbuilder system that required electronic data interchange-formatted messages.

- A third to an auditing system, which would be a Java 2 Platform Enterprise Ed-

ition (J2EE) application that only accepted Java-based messages (so the C application would have to send CORBA messages to a Java intermediary, which would create Java-based messages).

Even in this simplistic example, there would be five systems in play, each with

special interfaces to the other. Magnify this example by the hundreds, possibly thousands, of interfacing points maintained by most IT departments, and you will begin to understand the advantages of Web services.

Integrating Web services technologies, such as WSDL, SOAP and UDDI, into your IT infrastructure will let you take advantage of existing technology investments by simply "publishing" a standard interface for each application, which could be used by other departments and companies, and "subscribing" to the other applications in the company that are required to address a specific business issue or problem.

With flow languages, companies will be able to equip business architects with the tools to design how applications work, sending data behind the scenes to and from enterprise legacy applications and middleware products seamlessly.

By using Web services technologies, you can improve IT efficiency. To achieve a successful migration, start by migrating small systems that involve minimal cost and risk. And that will help executive management gain trust in the functionality of Web services technologies. Meanwhile, more delicate issues, such as deeply nested transactions, can continue to be evaluated. Finally, your IT development staff will spend less time maintaining multiple interfaces and protocols, letting them gain a more business-centric focus.

Weller, a managing consultant with Valtech in Addison, Texas, has extensive experience implementing Web services using J2EE and .Net technologies. He can be reached at david.weller@valtech.com.

■ Read about Microsoft's .Net strategy. PAGE 53

Ask Dr. Internet

By Steve Blass

Our team is spread out in home offices across the country. We're looking for a VPN solution to link our Windows 9X and Windows 2000 Professional systems across the Internet. We do not have a central server and no one has a fixed IP address. Are there any solutions for situations like ours?

Configure Win 2000 Professional as a VPN server to support one Internet connection at a time. From the Control Panel, choose Administrative Tools/

Services, double-click the Routing and Remote Access entry and choose Start. Go back to the Control Panel, open Network and Dial-Up Connections, double-click Incoming Connections, check the Virtual Private Networking box under the General tab, assign user privileges under the User tab, and configure Network settings under the Network tab. Once users install the Microsoft VPN client under Dial-Up Networking on their systems, they will be able to try to connect over the

.Net. Another approach is to use pcAnywhere for remote-control connectivity over the Web. Other tools provide connectivity through Web-based gateways and work through standard firewall configurations; Windows VPNs require holes in your firewall to get through.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD INSIDE THE NETWORK MACHINE

Mark
Gibbs



"You see, wire telegraph is a kind of a very, very long cat. You pull his tail in New York and his head is meowing in Los Angeles. Do you understand this? And radio operates exactly the same way: you send signals here, they receive them there. The only difference is that there is no cat."

— Albert Einstein, when asked to describe radio (quoted on the Nocat Web site, <http://nocat.net/>).

In response to the fun we've been having with wireless over the last two weeks, this question from a reader: "What is WiFi and what does it have to do with 802.11b?" The answer: 802.11b is an IEEE standard (approved in 1997 by the IEEE 802 committee) for wireless Ethernet, and WiFi is the name of a certification for 802.11b compatibility given by the Wireless Ethernet Compatibility Alliance.

Remember that 802.11b is a wireless, radio-based system limited to 0.5 watts. It

operates in the unlicensed 2.4-GHz band at speeds up to 11M bit/sec. A future incarnation of this technology, 802.11a, promises speeds of up to 54M bit/sec.

In general, an 802.11b net has a range of up to 300 feet when there are no obstructions, but the farther away you travel (and the more noise there is), the lower the data rate; 802.11b adjusts its data rate according to the quality of the radio environment.

Besides distance, performance can be degraded by radio interference, humidity, air temperature, resource contention (lots of PCs accessing an 802.11b net simultaneously) and objects that block the signal.

We found this last factor to be a significant issue at Castle Gearhead, where the walls, built in the 1920s, are of plaster covering an expanded metal lath. This makes each room a sort of Faraday cage (see <http://webphysics.davidson.edu/Applets/Poisson/Faraday.html>). This type of construction attenuates the signal far more dramatically than modern buildings.

Interference from radio noise can be difficult to track down and can be generated by microwave ovens and cordless phones. That said, we have not noticed major problems caused by our Siemens Gigaset telephones (a 2.4-GHz system, see www.mysiemens.com/MySiemens/CDA/

TextOnly/1,1683,3_GIGASET2420_0_1_194_0.FFhtm) and our wireless network.

Another performance consideration is the engineering of 802.11b PC Cards and access points you use: some vendors' engineering is better than others and that can affect throughput significantly. Some PC Card antennas, for example, are stubby extensions that protrude from a PC's side. This configuration is curious, as the antenna is most sensitive when it is vertical.

Thus, we suggest that if your 802.11b signal is poor, you should try rotating your PC 90 degrees and propping it against a wall while you use it. This may improve reception and transmission considerably. Of course, you'll look like a complete dork but that will be a small price to pay.

Anyway, if you want to maximize your range, the design of the antenna connected to your card is crucial. The majority of supplied antennas are omnidirectional, that is, they radiate energy more or less equally in all directions.

But if you replace the supplied antenna with, say, an antenna made from a Pringles container wrapped in wire (see link below), you can create a directional antenna that should be able to reach up to around 2 miles. Some people claim even greater distances (we have seen 20 miles quoted!).

We aren't joking about that Pringles can antenna: You can make an antenna for about \$5 that significantly improves the range compared with commercial products that cost \$150 or more (see www.oreillynet.com/cs/weblog/view/wlg/448). See also <http://nocat.net> for a great list of 802.11b links, including a lot more antenna designs and related data.

And just imagine the uses of these antennas! Talk about doing more with less: For just over \$200 you could connect buildings up to a couple of miles apart at a speed that rivals wires or laser transceivers (both of which are usually orders of magnitude more expensive). To create a dedicated service requires a router or firewall at both ends running network address translation, and the wireless link must be encrypted.

Of course now that your wireless nets are running you'll want to check them out — what does the traffic look like, why does that PC not get a reliable connection and so on. For this, you'll need a wireless network analyzer, and we have just started looking at a terrific product called AiroPeek from WildPackets that can capture, store, analyze and report on 802.11b wireless systems.

Next week, we'll tell you what we found... objects trouvee to gearhead@gibbs.com.

Cool Tools

A roundup of the latest neat stuff
Compiled by
Keith Shaw

ArialPhone inks deal with CompUSA

Coming soon to a CompUSA near you — the ArialPhone, a voice-activated cordless and wearable telephone device. The ArialPhone combines speech recognition technology with wireless technology and puts it in a small, wearable earset. In addition, the ArialPhone can interact with PC contact management programs, so a worker can say "Call John Doe" into the headset and the software will automatically dial the number based on the information in the contact management program.

ArialPhone Corp. is marketing the device toward teleworkers who want to roam around their homes or offices while still making phone calls. The unit has a range of about 150 feet from the base station. Expect to see the product in CompUSA stores (and other retail locations) for about \$400. For more details

on the device, go to www.arialphone.com.

Flat panel monitor for \$400

NEC-Mitsubishi Electronics Display announced its NEC MultiSync LCD1550V, a 15-inch flat panel monitor that costs only \$400. The new model is the second in its thin-frame LCD monitor line, and it replaces the NEC MultiSync LCD1530V.

The slim casing of the LCD1550V lets it be set up flush against other monitors for a more uniform multiple-viewing experience, saving up to 12% more horizontal space than previous LCD monitors. The monitor weighs 8.4 pounds with its stand and measures 2.4 inches deep. It can also be mounted on a wall. The LCD1550V provides a native resolution of 1,024 by 768 pixels and features the On Screen Manager display controls for monitor adjustments.

It is compatible with PCs and Macintosh computers, has a "No Touch Auto Adjust" feature that claims to provide optimal display settings upon initial power on, and a high-bright backlight. The monitor is available now. Go to www.necmitsubishi.com for more information.



MultiSync LCD1550V

Canon launches new digital cameras

Canon has released the PowerShot S40 (4.0 megapixels) and S30 (3.2 megapixels), two "upper mid-range" products. The new cameras are positioned between the PowerShot S300 Digital ELPH and the PowerShot G2 cameras.

The S40 and S30 are available now from Canon resellers for \$800 and \$600, respectively. Both cameras feature a 3X optical zoom lens, three-point autofocus and 13 shooting modes from fully automatic to fully manual. They are compatible with Type I and Type II CompactFlash cards, include a Universal Serial Bus interface, have a movie mode and Windows XP compatibility, and can directly print to Canon's new S820D bubble-jet printer.

Go to www.canonusa.com for more details.

Bluetooth adapter for Handspring

Red-M has launched the Red-M Blade for Handspring, a Bluetooth adapter that gives Visor owners Bluetooth connectivity. With connectivity to a Bluetooth-enabled access point or a Bluetooth-enabled cell phone, Handspring users can access e-mail, cal-

endars and contacts, and browse the Internet or a corporate intranet.

The Springboard module works with Handspring Visor Platinum, Edge, Prism, Pro and Neo models. The Blade costs \$180 and is available now. The Red-M Blade for Palm Vx is also available, and costs \$200. For more details, go to www.red-m.com.

Apple launches MP3 player

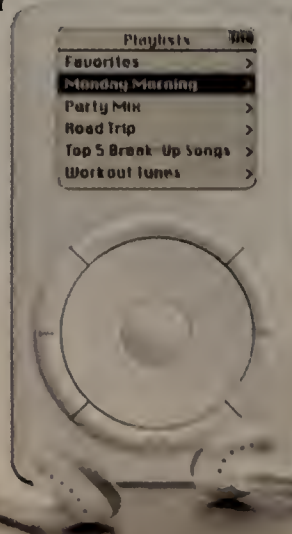
Apple recently launched its iPod MP3 music player, which boasts the ability to pack up to 1,000 songs into an ultra-portable, 6.5-ounce device that can fit into a pocket. It comes with a 5G-byte hard drive, and features up to 20 minutes of shock protection for nonstop playback when running or biking, for example.

The iPod has a built-in FireWire port, and Apple says you can download an entire CD into the device in less than 10 seconds, and 1,000 songs in less than 10 minutes. The device can only plug into a Macintosh with a FireWire port.

The iPod will be available Nov. 10 for \$400 at www.apple.com, Apple retail stores and Apple resellers. The device comes with the iTunes 2 software, earbud-style headphones, a FireWire cable and FireWire-based power adapter.

Send cool product info to kshaw@nww.com.

Apple's iPod



WebSphere software



IBM

THEY CAME LOOKING FOR THE SOFTWARE CHOSEN BY LEADING E-BUSINESSES. THEY FOUND:

WEBSPHERE[®] AT eBay[™]

IBM WebSphere is the fastest-growing e-business software platform: eBay, one of the most successful "born on the Web" companies, has turned to WebSphere infrastructure software as it gets even more serious about e-business. WebSphere has the scalability to build, launch and maintain a massive around-the-clock site like eBay. Over thirty million registered eBay users will rely on the dependability of WebSphere when they buy collectibles, electronics and B-to-B services. Visit ibm.com/websphere/eBay



EDITORIAL

John Gallant

Ready for a VPN Showdown?

VPNs are an unqualified success. While many heralded technologies have failed to catch fire in corporate networks, VPNs have won wide acceptance and the future looks even more promising.

To date, many companies have taken a do-it-yourself approach to VPNs — outfitting routers or installing other gear that support private VPNs. But VPN services from carriers are beginning to take off, and research firms are predicting rapid growth. IDC says the U.S. market for IP VPN services will grow to almost \$10 billion in 2005 — a compound annual growth rate of more than 50% from sales in 2000.

VPN services promise dramatic cost savings from traditional services, such as frame relay and wider, more flexible reach. But there are lots of questions about how to deploy these services, what kind of security is supported, how the services are managed, and what you ought to be paying for them and expecting in terms of reliability and performance.

In other words: The time is ripe for *Network World* to stage a VPN Showdown — a presidential style debate among the leading suppliers of VPN services. That's just what I'm going to be doing beginning at 2:30 p.m. Tuesday, Jan. 29, at the Comnet 2002 conference in Washington, D.C.

Jim Metzler, founder of the Ashton-Metzler consultancy and host of *Network World's* State of the WAN seminar tour, will join me on stage as we grill the vendors about their services, pricing and strategies.

I'm challenging the top four VPN service providers (as determined by IDC's research) to get up in front of the audience and face questions from us, their competitors and customers. Those carriers are: Genuity, WorldCom, AT&T and Equant. I'm open to adding a fifth provider — perhaps a newcomer with an innovative offering or another major carrier — if readers express an interest in seeing such a company under the lights.

Genuity, WorldCom, AT&T and Equant have been notified and have until Monday, Nov. 19, to let me know whether they accept the challenge. If one of them doesn't, we'll let readers know, and we'll extend the invitation to another competitor. But I'm confident they'll want to stand up and be counted.

In the meantime, I'd love to hear from you about the issues you'd like to see us explore during this Showdown. So drop me a note. And make plans to join us at Comnet!

— John Gallant
Editorial director
jgallant@nww.com

opinions!

Security check

Regarding "Former federal agent calls XP a threat to national security" (www.nwfusion.com, DocFinder: 6723): Banning security features for the sake of making intelligence collection easier is not a good idea. This is very much related to the control of encryption technology and the key escrow debates. The intelligence community needs to develop new ways to do its job in the face of increasing technology to make systems more secure. Simply legislating security techniques as being illegal is not the answer.

Stephen Mencik
Gambrills, Md.

The notion that XP is a threat to national security is pure rubbish. I use a third-party tool just to keep the hard disk drive clean and thus keep the computer running at top efficiency.

It isn't like Microsoft planned to thwart the system: These third-party tools have been available to the consumer for quite a while. If anything, Microsoft is late in delivering add-ons that should have been on board Windows 95 and later operating systems.

Ted Coffman
Mount Vernon, Wash.

I wouldn't be surprised if this story turns out to be the result of Microsoft's marketing/public relations machine. By claiming XP "scrubs" deleted data so completely as to constitute a security threat to the authorities, Microsoft hopes to attract the disaffected users who are fed up with Microsoft's atrocious record on security in general.

Bob Fately
Product manager
Fashionchain
New York

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

Caching in

In his column "Suffering with service absurdity" (www.nwfusion.com, DocFinder: 6725), Dave Kearns talks about putting Dell support to the test in troubleshooting a boot error. Kearns mentions that searches to Google turned up only one relevant hit; unfortunately, the page was no longer available. There are two things troubling with this.

First, does Kearns not know about Google's cache feature? For any Web page that results from a search, Google has the page saved on its servers. If the page is no longer available, one can often click the "Cache" link and view the page as it existed when it was cataloged.

Second, if Kearns had done a search using Google's newsgroup search feature, he would have found a number of messages posted both by puzzled users experiencing the same problem and from others who can actually interpret the message. To test this, I performed a search for "exception trap 00000006 error" and had plenty to read.

Being a Linux user, perhaps I'm just more in tune with the variety of Web support resources available, but it surprised me that a columnist for a technology magazine would seemingly know so little about ferreting out information on the Internet.

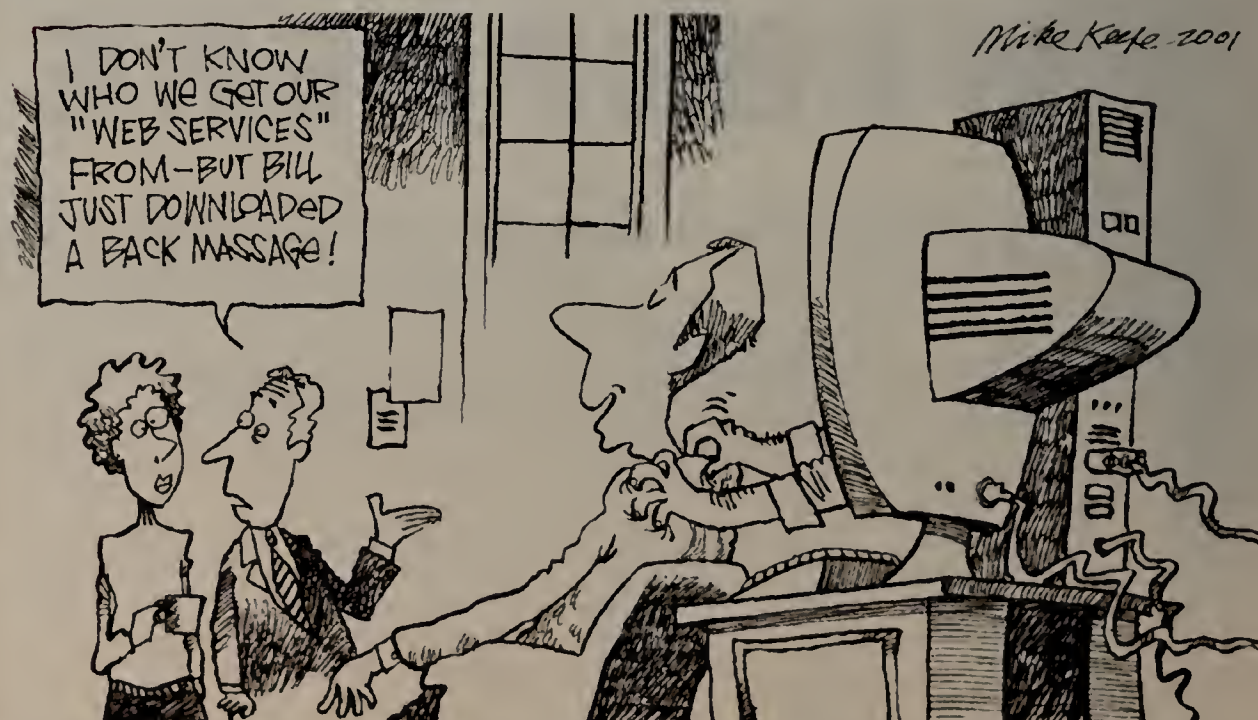
Travis Prebble
State College, Pa.

Kearns replies: I am aware of Google's ability to search newsgroups and recall from cache pages that have disappeared, but it doesn't keep copies of everything forever. Trying the search again today (using "exception trap 00000006" to search Google Groups) still turns up only one hit.

However, dropping the quote marks turns up more hits. I should have tried that, because I often counsel others to do so when a phrase search doesn't quite work out. Mea culpa.



More online! www.nwfusion.com Find out what readers are saying about these and other topics. **DocFinder: 6722**





BOTTOM LINE

Joel Snyder

Disaster recovery is on everyone's mind right now — or should be. Here are lessons some of my clients have learned in the wake of recent events.

- **Test your backups.** Often companies set up and test backups, and then proceed (over the years) to change software versions

and patches, operations procedures, physical media and everything else — without retesting. If you don't test your backups, you'll never know if they're going to work. Once is not enough.

As long as you're testing your backups, step back and re-evaluate your entire operation. Do you move tapes off-site frequently enough? Daily should be your goal, but if you can't afford that, at least try for weekly. Do you have a long enough back-up cycle? A retention cycle of between two weeks and a month is typical, but the longer the cycle, the better the chance you'll have the data when you need them.

- **Get a VPN.** If you're using private lines to link offices, get a VPN — not necessarily to replace those lines, but at least to back them up. If the private lines go down, you can safely and securely send your site-to-site data over the Internet.

If you have Cisco routers at the edge of your network, then you already have all the hardware you need for a disaster-recovery VPN. All you need to do is get your IOS upgraded and spend some time configuring — and testing — the back-up plan. If you've got a remote-access system at corporate headquarters, such as Nortel's

Lessons on disaster recovery

Contivity, then you also have a big piece of the picture. As last month's VPN interoperability review shows (see www.nwfusion.com, Doc-Finder: 6669), you can link almost everything. Look at products from folks such as Red Creek for low-cost VPN back-up devices. Or consider using your Windows 2000 servers as site-to-site VPN gateways. Some connectivity, no matter how hokey, is better than none.

- **Check your Internet connection.** Don't depend on your ISP to keep your Internet connection up in the event of a problem; take charge of this yourself.

It is difficult for most companies to multihomed to different ISPs properly. Autonomous system numbers are expensive and a finite resource, and setting up the routing and getting the address space is a challenge. But for disaster-recovery purposes, you can probably get by with a back-up connection and an arrangement for the back-up ISP to advertise your IP addresses when the primary ISP (or your circuit to the primary ISP) is unavailable. That can be a tricky configuration, but if you work on it now — and test it periodically — you can survive a major outage.

There's no time like the present to examine and test your disaster-recovery procedures. Take advantage of the slowdown in business to solidify your network and get yourself ready for tomorrow.

Snyder, a Network World Test Alliance partner, is a senior partner at Opus One in Tucson, Ariz. He can be reached at Joel.Snyder@opus1.com.

There's no time like the present to examine and test your disaster-recovery procedures.



REALITY CHECK

Thomas Nolle

This past summer, regulators were considering a key issue: Should the regional Bell operating companies be granted relief from the terms of the Telecommunications Act of 1996 for their data services? The events of Sept. 11 ended any chance of that happening, and RBOC oppo-

nents cheered the boost to the competitive marketplace. But now the RBOCs are about to eat the market, and at the head of the pack is Verizon.

The fact that there was no congressional action this fall doesn't mean there won't be any regulation; the telecom act is still in force. The RBOCs can enter the data markets through entry into long-distance markets under Section 271 of the act. Throughout this year, the RBOCs were holding back on new 271 applications, waiting to see if Congress would move. It didn't, and now all the RBOCs are pushing their 271 filings. BellSouth, which had no long-distance approval anywhere, says it will be released in all its states within 12 months. But it's Verizon that is now in the lead, having quietly moved to gain approval to offer long-distance services in all of its major states but one — New Jersey, where approval is expected early next year.

For voice services, a RBOC has a tremendous advantage over an interexchange carrier (IXC) because RBOCs already have switches that place and route the toll calls; they just can't do the inter-LATA part. But it's the RBOCs' edge in corporate data that may trouble competitors the most. RBOCs now support the part of the network where support is the most expensive — the local loop. Adding a little extra effort to support long-distance data service wouldn't even create a blip in costs — but that blip is the entire cost base of the IXCs.

RBOCs have salesforces that deal with the major accounts and with smaller businesses whose low long-distance spending pulls them under IXC radar. There will be no significant increase in sales costs to RBOCs to attack IXC frame relay and ATM markets once the RBOCs are released into long-distance, and guess whose territory has the largest number of data centers and headquarters sites? Verizon.

The new competitive dynamic will absolutely kill every IXC as we

Networking's 900-pound gorilla

know them, probably within two years. In fact this dynamic is behind the AT&T-to-BellSouth merger talks that have been reported. As interesting as this marriage might be, though, it's not the likely one. Instead, look for a deal between Verizon and WorldCom.

Why Verizon? Because an RBOC can't merge with an IXC unless the IXC divests itself of any long-distance customers in states where the RBOC can't offer long-distance service. For BellSouth right now, that's every state. For Verizon, the critical states will fall into line by the first quarter of 2002. They can then move — and every other RBOC is a minimum of six to nine months behind.

Why WorldCom? WorldCom would give Verizon a jump on the long-distance market nationally, which is important if you have a relatively small region (compared to, say, far-flung SBC Communications). WorldCom would also give Verizon sales strength in the West and South, where it has no real account control.

A combination of Verizon and WorldCom would be formidable, and that's certainly the focus of the other RBOCs' and IXCs' planning. Where will that competitive face-off take us, technology-wise? Not to IP; RBOCs make next to nothing in that space, and IXCs don't do much better. Frame relay, ATM, transparent LAN and those dull old services will be where the action is. IP gets a piece of the action, though. RBOCs like IP managed services, created by adding IP layers to frame relay or ATM. We can expect these services to be promoted more heavily, as indeed is already happening with BellSouth and Verizon. The RBOCs will probably lead the market into truly profitable IP service. Irony, huh?

So RBOCs in general, and Verizon in particular, are set to win it all. The lesson to be learned is that you can't micromanage competition in a free market. Opportunity is where you find it, and the hundred billion bucks in IXC revenue is the opportunity that will drive the market in 2002 — especially Verizon, which has sneaked into the catbird seat, perhaps not to be unseated.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (856) 753-0004 or tnolle@cimicorp.com.

The RBOCs are about to eat the market, and at the head of the pack is Verizon.

Designing the new

■ BY ROLF MCCLELLAN AND JIM METZLER

THE growth in capacity of the typical LAN over the past few years has been explosive. It is now common to connect desktops to a wiring hub using dedicated Ethernet running at 10M or 100M bit/sec. It is also common to interconnect these wiring hubs with dedicated Ethernet running at 100M or 1,000M bit/sec.

At the same time, there has been continued deployment of higher-capacity fiber optics in the core of the WAN. However, to date there hasn't been a similar increase in the performance of services in the metropolitan area. Access services between a company's location and the point of presence (POP) of its network service provider tend to be expensive, highly subject to failure, and time consuming to provision.

Many vendors, both incumbents and newcomers, are trying to fill this void with inexpensive Ethernet-based metropolitan-area network (MAN) services.

However, with more organizations interested in running complex applications, such as enterprise resource planning (ERP) and customer relationship management (CRM) over the WAN, and with new applications such as videoconferencing and streaming video looming on the horizon, any new access service needs to offer more than just cheap bandwidth.

These services also need to deliver the reliability, security, manageability and flexibility that companies have come to expect of traditional WAN access services built on the SONET infrastructure.

The first significant attempt at delivering MAN services was the deployment of transparent LAN services

(TLS) based on ATM/SONET in the mid-90s. These managed services failed to catch on for a number of reasons. First, they were more focused on masking the complexity of WANs than on reducing cost per megabit per second, or on addressing the problem of long lead times for more bandwidth. Also, Ethernet was not as robust as it is now, and there wasn't nearly as much optical fiber in the ground then.

Today, a number of competitive local exchange carriers (CLEC) and incumbent local exchange carriers (ILEC) are trying again to eliminate the bandwidth bottleneck in the metropolitan area, this time by extending optical technologies from the LAN and/or the WAN core into the MAN. These new MANs can potentially replace all the connectivity provided by the traditional local loop. They include:

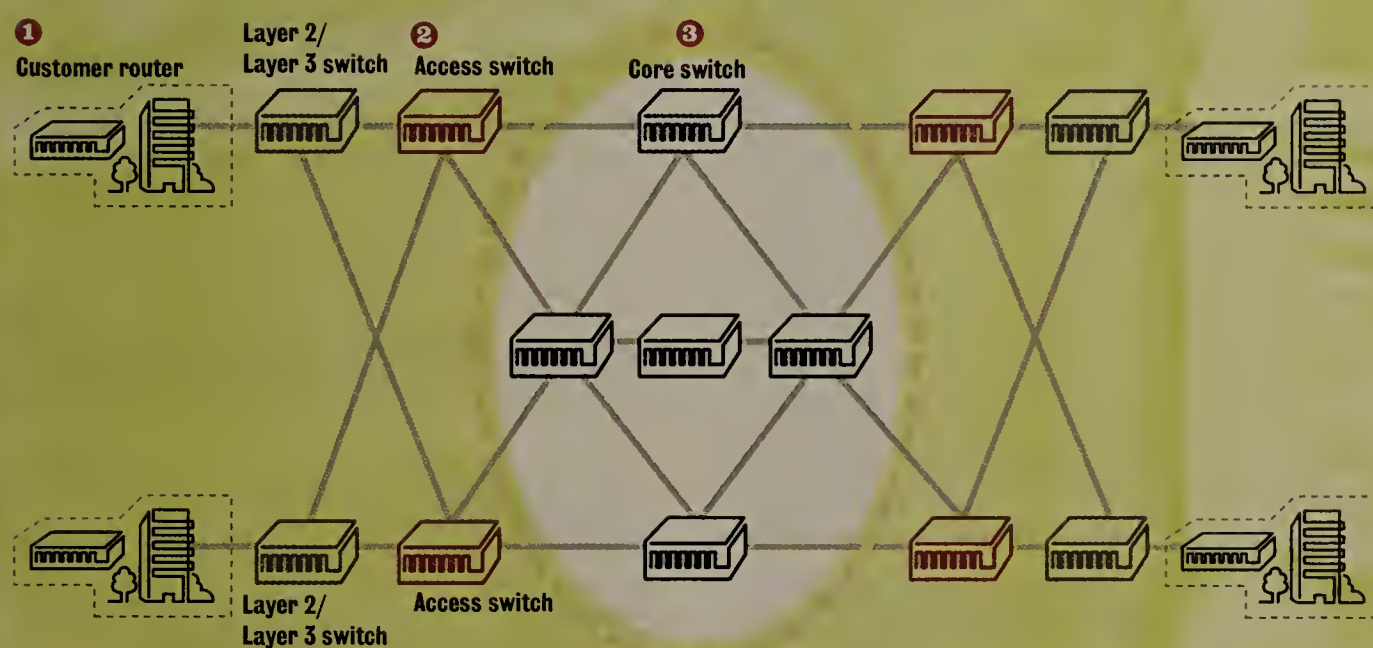
- Site-to-site in the metropolitan area.
- Access to the Internet or ISP
- Access to WAN services between metropolitan areas.

One common requirement of MAN access solutions with bandwidths of 100M bit/sec and higher is that an optical fiber be available to connect the enterprise location with the service provider's POP. This explains why most MAN service providers are focused on dense concentrations of large, often multitenant, office buildings where fiber may already be available, or where the installation costs can easily be justified.

Service providers tap into long-haul Ethernet and optical multiplexing to break the metropolitan-area bottleneck.

Point-to-point Ethernet-based MAN

Simple, homogeneous MAN built on long-haul Ethernet and Layer 2/Layer 3 Ethernet switches.



1 MAN traffic from the customer site is encapsulated with a VLAN header and bridged over the MAN.

2 Access switches have active and standby links for greater reliability.

3 Mesh configuration in the core provides reliability.

MAN technologies

The coalescence of LAN and WAN technologies in the MAN may well result in a simpler, more homogeneous end-to-end LAN/MAN/WAN network optimized for high-speed data traffic. That follows because the improved simplicity of the new MANs let service providers offer much lower cost per M bit/sec, plus quicker provisioning to let users deploy just-in-time capacity expansion.

The primary LAN-derived technologies being deployed in MANs include:

- Long-haul Ethernet over dark fiber: 100Base-LH and 1000Base-LH.
- Coarse wavelength division multiplexing (CWDM).
- 10 Gigabit Ethernet.

The WAN core is also contributing a number of significant technologies to the metropolitan area:

- Dense wavelength division multiplexing (DWDM).
- Optical amplification.
- IP packet over SONET/SDH.
- IP packet over DWDM.
- Packet ring technology (standards work in progress).
- MPLS and multiprotocol lambda switching. A lambda is a single wave of light in a fiber-optic network.

Hardware vendors are packaging various combinations of these technologies in a range of service interface units (SIU), which are the service provider-managed customer premises equipment (CPE) to which enterprise routers and switches connect for MAN services.

SIUs fall into two general categories:

- Ethernet MAN switches. These might be Layer 2/Layer 3 LAN switch designs that have been adapted for the MAN by the incorporation of long-haul Ethernet and/or CWDM.
- DWDM shelves with optical add/drop multiplexer (OADM) functionality and varying degrees of time-division multiplexing (TDM), IP switching and SONET or optical protection functionality.

MAN architectures

In evaluating different MAN services it is important to understand the MAN architectures that competing vendors are deploying because the underlying technologies dictate the key characteristics of the services that can be offered. This includes flexibility to support new applications, bandwidth scalability, cost, reliability, security, manageability, quality of service and ability to provision bandwidth rapidly. The most important aspects of MAN architecture for users to focus on are the capabilities of the managed CPE and SIUs and the related equipment in the points of presence (POP) used to connect the site to the MAN and the MAN to other WAN services.

Transparent LAN services have been available from a number of ILECs, such as SBC Communications. The Ethernet traffic from one site is encapsulated in accordance with RFC 1483 and bridged over the ATM network to a second site. A permanent virtual circuit (PVC) would be configured for each pair of sites in the MAN. Scalability

and cost are determined by the ATM/SONET equipment, with SONET protection plus redundancy in the POP eliminating single points of failure in the MAN itself. With a dedicated PVC and SIU for each customer site, security is equivalent to that of an ATM network service.

For Internet and WAN connectivity, more routed ports would have to be configured on the site router/switch, and additional PVCs established to the ISP and the provider of routed IP backbone service.

MAN CLECs, such as Telseon, are using a much simpler and more homogeneous MAN architecture based on long-haul Ethernet and Ethernet Layer 2/Layer 3 switches. In this example (above), the SIU at one site could be dedicated to a single subscriber or shared by a number of subscribers in a large multitenant building. In either case, the MAN traffic of each subscriber would be encapsulated with a unique 802.1Q virtual LAN (VLAN) header and bridged over the MAN. As with the TLS, additional routed ports would be configured for Internet access and WAN services.

Scalability is provided by the long-haul versions of Fast Ethernet and Gigabit Ethernet, while 10G Ethernet and future generations of Ethernet will have inherent long-reach characteristics. Reliability of the MAN is made roughly comparable to that of the SONET-based TLS through the use of meshing and redundant links, with fast spanning tree failovers in the event of link failures. Where the security offered by VLANs is not considered adequate,

IT organizations may well decide to deploy firewalls and other security functionality at the appropriate sites.

Because of the scarcity of optical fiber in the last mile to customer sites, equipment vendors have been integrating CWDM and proprietary packet ring technology in their Ethernet MAN switches. CWDM provides four or eight wavelengths over each fiber strand, compared with up to 32 or 64 wavelengths in the case of DWDM. A dual, self-healing Ethernet ring is used to daisy-chain among the customer sites with the CPE MAN switch providing add/drop functionality.

Most of the other characteristics of the CWDM Ethernet MAN are similar to the point-to-point Ethernet MAN described earlier. The CPE MAN switch may be shared in a multitenant unit (MTU), and MAN traffic is bridged with a VLAN or VMAN per subscriber, with additional routed ports required for Internet access and routed WAN services. Yipes Communications uses this model for most of its POPs.

While there are a number of proprietary packet ring implementations, the IEEE is working on Resilient Packet Ring standard IEEE 802.17, which will be optimized for Ethernet frames and is intended to deliver availability similar to that of a SONET ring over dark fiber or WDM. A notable prestandard technology being considered by the IEEE is Cisco's DPT 622M bit/sec ring network based on the Spatial Reuse Protocol (SRP), a Cisco-developed media access control-layer protocol for ring-based packet internetworking that is self-healing and has a recovery time of less than 50ms.

SRP and 802.17 are intended to provide higher-bandwidth efficiency and better support for meshed topologies than SONET can deliver with its more rigid TDM structure (see graphic, right).

Another class of MAN architecture is based on DWDM rings linking OADM's. Because of the overpopulation of the market for optical networking products, OADM's come in lots of flavors.

The primary difference among OADM's is how much support each provides for SONET. Among the possibilities are to support SONET framing, SONET protection/restoration and/or SONET TDM/ADM functionality. SONET support is very important for ILECs that require backward compatibility with their TDM infrastructures and for CLECs that are interested in offering traditional WAN access (such as frame relay and T-1 leased lines) in addition to 10/100/1000 Ethernet MANs and other high-bandwidth services.

A start-up carrier that focuses DWDM entirely on Ethernet MANs could presumably minimize the cost of the infrastructure by avoiding SONET support altogether. The combination of flexibility and scalability of DWDM-based MANs has attracted a wide range of incumbent and start-up MAN vendors, including Verizon, GiantLoop, Cogent Communications, LightWave Communications, XO Communications and GigX Communications. Other ILECs are expected to follow suit.

Another key difference among OADM's is whether they let a number of subscribers for nontraditional services share the bandwidth provided by a single wavelength (such as 10G Ethernet channels over one lambda at OC-192). If a lambda must be dedicated to one subscriber, the rest of the potential

bandwidth of the wavelength is essentially wasted. One approach is to allocate a lambda to a type of service, such as Ethernet, by switching traffic from multiple users over one channel with MPLS or VLAN tagging of subscriber packets. Among other solutions is to groom multiservice traffic for transport over a single lambda using SONET or non-SONET TDM.

A third area of OADM differentiation is the way that protection is delivered to non-SONET services. One approach is to extend SONET's protection to other services. However, DWDM itself can provide one-to-one protection at the optical level for Ethernet and other services by holding a lambda in reserve as a backup for each primary lambda. Another possible DWDM approach is to use one-to-many protection with a single lambda backing up multiple primary lambdas.

One key aspect of the DWDM physical layer is that a wavelength and the on-off keying of the light beam to modulate the signal are quite indifferent to the upper-layer protocols. Therefore, a single optical interface card on the OADM can provide native transport for a number of LAN or SAN technologies that are clocked in the same speed range. Hence, many OADM implementations can transport a range of optical traffic types, including SONET/ATM, Ethernet, Fibre Channel, Enterprise Systems Connection (ESCON), Fiber Connection (FICON) and other proprietary protocols used by remote storage services and remote CPU back-up or clustering services.

For larger customers, a MAN based on DWDM can offer the possibility to lease an entire wavelength to connect two sites in a MAN or even two MAN-attached sites separated by thousands of miles. The maximum capacity would be determined by the optical bandwidth of the MAN or the MAN/WAN network, and customers could use the bandwidth in whatever way they wished, such as Gigabit Ethernet during business hours and ESCON at night for remote backups or database synchronization. A lambda service also provides an enhanced level of security over packet-based or circuit-based services because of the added difficulty of intercepting or tapping optical signals.

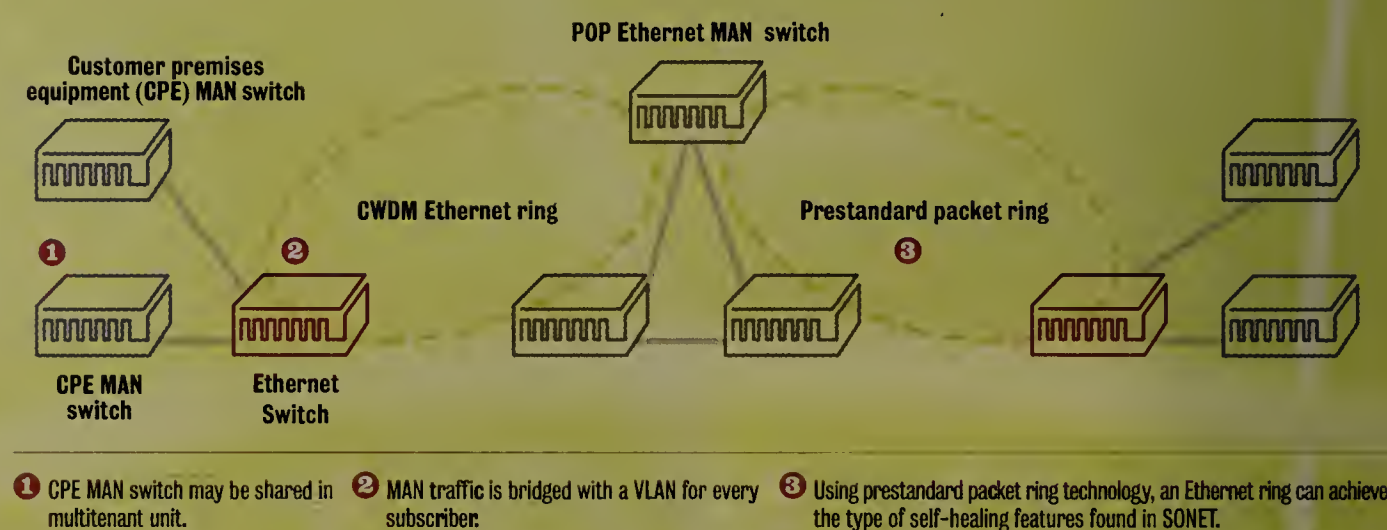
The graphic at bottom shows a DWDM MAN implementation where the inter-POP and in this case the WAN connectivity, is provided by a mesh of IP gigabit switch routers (GSR).

For a lambda DWDM service, the site routers or other network equipment, such as SAN switches, would be directly connected to the OADM, and the GSRs would be replaced with a long-haul DWDM network to convey the lambda site-to-site.

Metzler is vice president of Ashton, Metzler & Associates, a consultancy in Newton, Mass. He can be reached at jim@ashtonmetzler.com. McClellan is the principal consultant at McClellan Consulting. He can be reached at rolfmcc@mcclellanconsulting.com

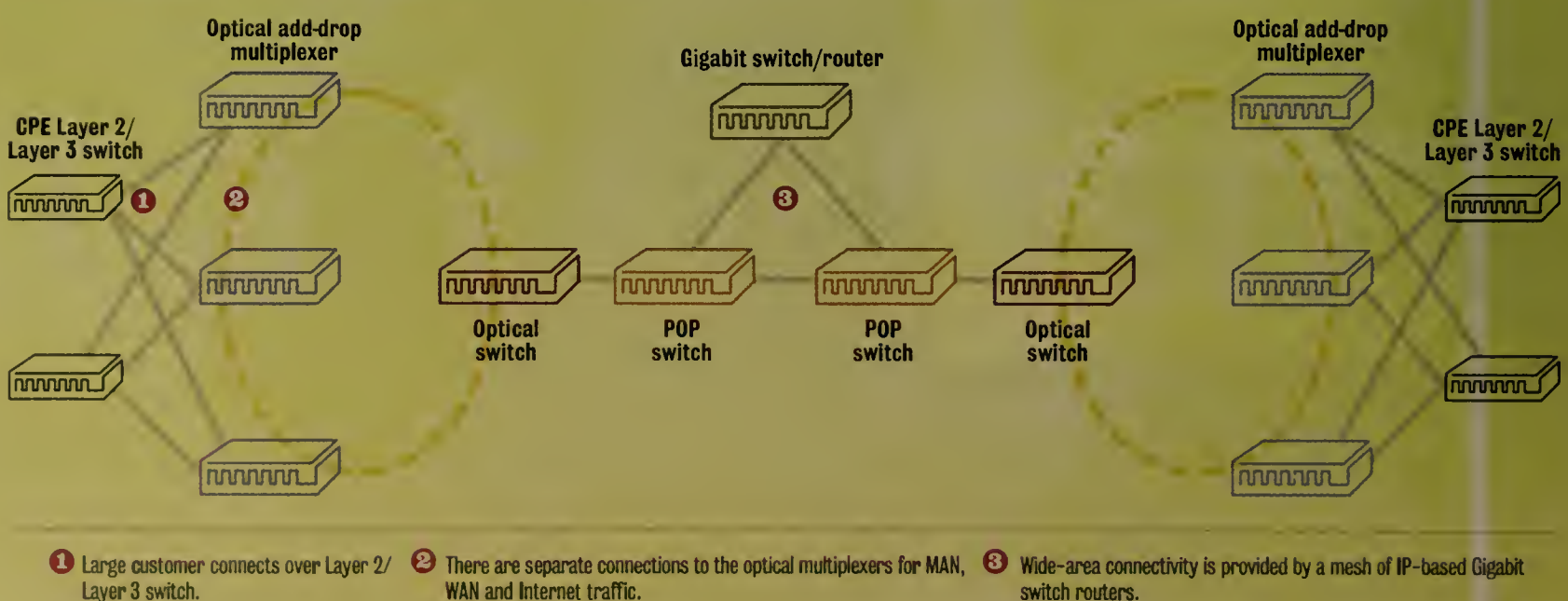
IP-based MAN with CWDM rings

Coarse wavelength division multiplexing (CWDM) provides four or eight wavelengths over each fiber strand, compared with 32 or 64 in dense wavelength division multiplexing.



IP-based MAN with DWDM rings

A MAN architecture with dense wavelength division multiplexing (DWDM) rings linking optical add-drop multiplexers provides backward compatibility with legacy time-division multiplexing infrastructures.



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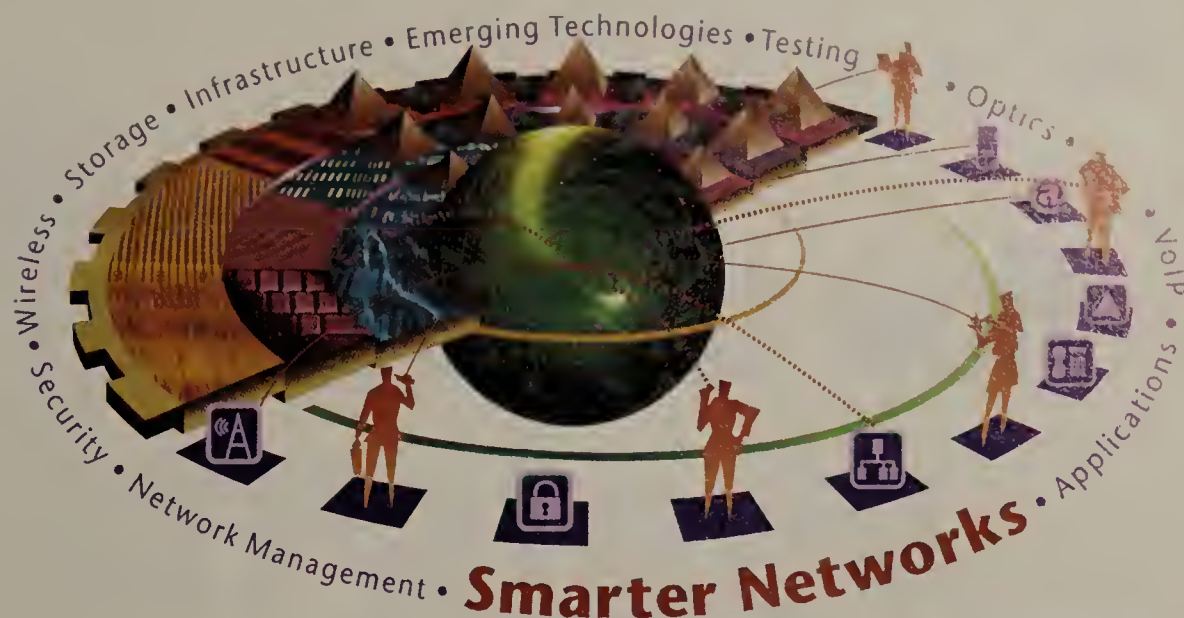
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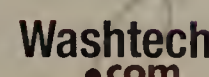
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How to choose a

■ BY JIM METZLER AND ROLF MCCLELLAN

Service providers have been trying to sell managed services for years, but most companies have resisted, partly because if a company implements a managed service, it gives up most, if not all, visibility into how that service is performing.

For many companies, that has been an unacceptable price to pay.

The new MAN service providers might finally be able to break through this resistance by providing companies a high degree of visibility into the status and performance of the service provided.

In fact, most MAN vendors now give customers read access to the service provider's trouble tracking system and access to online reports that detail how well the service provider is meeting service-level agreements (SLA).

While this is certainly a good thing, it would be even better if users could directly enter trouble tickets into service providers' trouble tracking systems.

While some MAN service providers are currently providing this functionality, most are not. In only a few cases do MAN service providers let users request bandwidth changes online.

There is also some important management functionality that is missing from most of the current generation of MAN services. This functionality includes:

- Automated alerts to customers of fault or performance issues.
- Bandwidth self-provisioning.
- Real-time SLA status.
- Customer access to fault management and service assurance tools.
- Online access to billing information.

There are also clear differences in the ways that MAN service providers implement security. In some cases, security is provided by virtual LAN tagging; that is, 802.1Q.

Customers want scalable bandwidth

We recently surveyed more than 300 network executives to gauge their interest in deploying new MAN services. The survey respondents expressed a relatively strong interest in deploying MAN services running between 1G and 10G bit/sec.

The strongest response came when we asked the survey respondents about their interest in deploying high-speed scalable bandwidth, which we defined as being able to increase bandwidth in megabit-per-second increments. Almost half of the 300 executives surveyed responded with a six or higher rating, indicating a very strong interest in this type of service.

However, companies may have some concerns about that level of security, particularly in cases where several companies are sharing a Layer 2/Layer 3 switch in a multitenant unit or in a packet ring.

Multi-protocol Label Switching (MPLS) is just beginning to be implemented by some MAN service providers. In addition to its use for traffic engineering, MPLS-enabled MAN services offer a somewhat higher level of security.

Pricing

It is difficult to provide hard and fast rules on service provider pricing schemes because they have considerable latitude on street prices.

Also, because of the embryonic state of the MAN marketplace, some services are currently only priced on an individual-case basis.

However, as a rule of thumb, you should think of paying around \$2,000 per month for a 10M bit/sec service, \$3,000 per month for a 100M bit/sec service, and \$8,000 per month for a gigabit service that provides connectivity in a metropolitan area or access to the Internet. This pricing is notably better than equivalent legacy services.

There are a number of factors that can affect pricing. Some have little to do with the underlying technologies and more to do with how the service provider is positioning its services, or the structure of the contract. For example, some MAN service providers offer distance-insensitive services, while others have a distance-sensitive component in their pricing.

Other factors are revenue commitment and the length of the agreement. Conventional wisdom is the larger the revenue commitment, the lower the price. While that is the general tendency, in many instances it's not the case.

Relative to the length of the contract, you should think about getting a reduction in the range of 10% to 12% with every level of additional commitment you make. That means moving from a contract that is month to month, to one that is for a year, to one that is for three years, to one that is for five years.

There are also a variety of technology-based factors that affect pricing, including whether fiber already in place, and whether the vendor can offer service in increments.

Customers are extremely interested in MAN services that make it easy to increase bandwidth in megabit-per-second increments.

However, some MAN service providers offer only two speeds — 10M and 100M bit/sec. Some offers only provide an entire lambda, or a single wave of light, in a fiber-optic network.

vendor

Another factor is breadth of functionality. Some features to consider are inside wiring, managed CPE, managed firewall, managed encryption server, digital certificate server, IP filtering, NAT and redundant access.

Service-level agreements

In general, SLAs associated with legacy MAN and WAN services tend to be weak. SLAs associated with new MAN services appear to be somewhat better.

Full details of SLAs are often held back unless a customer submits a formal request for proposal, or enters into similar negotiations. But there is evidence that there is more substance to MAN SLAs than with legacy services.

Here's a list of service-level parameters that customers should look for when analyzing MAN services:

- Bandwidth committed information rate.
- Ability to burst.
- Packet loss ratio.
- Latency.
- Jitter.
- Mean time to install.
- Mean time to increase bandwidth.
- Mean time to restore.
- Availability.

Generally speaking, the credits for MAN SLAs are only slightly stronger than those for legacy services.

Conclusion

On paper at least, the new MAN services are a big step forward. They are more cost-effective than equivalent legacy services, and offer somewhat better management and SLAs. These are, however, new services being offered with new management systems. That means potential buyers need to be cautious.

Customers should avoid long-duration contracts and investments in MAN-specific CPE, because of escalating price competition and rapid technology obsolescence. Potential buyers should also brace themselves for all the highs and lows of the first generation in a new era of MAN services.

But these services look good enough that it does make sense to consider using them today for Internet access and connectivity among sites in a metropolitan area. Hopefully, we can soon use them for WAN access, most notably to VPN services as part of a common VPN solution across the MAN/WAN. ■

Microsoft

BY ARTHUR ENGLISH

strategy

pushes the Web application development envelope

With the expected release of VisualStudio.Net by year-end, it's important for network executives to understand how Microsoft's .Net strategy will affect the development of Web-based applications and Web services.

So what is .Net?

The idea dates to 1999, when it was talked about as Next Generation Windows Services. Before the arrival of .Net, the Microsoft acronym of choice was DNA, which stands for Distributed iNternet Architecture.

.Net supplants DNA and elevates the Microsoft development environment and tools to a new level of sophistication, power and ease of use, compared with previous versions of Microsoft development tools.

At its core .Net is XML. Microsoft product managers like to say, "XML is baked into everything," but it would be more accurate to say that XML some day will be baked into everything.

For example, BizTalk Server 2000 has XML fully baked in, as Microsoft states. SQL Server 2000 has XML baked in to the point that you can move XML documents into and out of an SQL Server database without coding. Other .Net servers, such as Exchange Server 2000, still need another release to be able to really take advantage of XML.

If you were to define .Net as solely the new .Net run-time environment that is built on the .Net Framework and the Common Language Runtime (CLR), then none of these .Net servers are really .Net. You will have to wait until the next release of any .Net server for it to utilize the new .Net runtime environment.

How does it work

In a .Net application, on top of the XML layer, there's Simple Object Access Protocol (SOAP), an emerging standard for sending messages across the Internet that enable application-to-application interoperation.

SOAP uses XML to describe messages and HTTP to transport them. Web Services Description Language (WSDL) is a new specification to describe networked XML-based services called Web services.

WSDL offers a simple way to describe the basic format of requests regardless of the underlying protocol (such as SOAP or XML) or encoding (such as Multi-purpose Internet Mail Extensions). WSDL is a key part of the

effort of the Universal Description, Discovery and Integration initiative to provide directories and descriptions of online services for e-commerce.

Visual Studio.Net makes creating Web service client or server applications intuitive and easy. To build a Web service server, you use a Visual Studio.Net wizard to create your initial application. To expose a class method in the Visual Basic application you created as a Web service, you add the attribute "<Webmethod()>" as part of the function definition. That's it.

Once the XML Web service has been built, it can be invoked via HTTP using XML to pass data to and from the service. To use an XML Web service from Visual Studio.Net, all developers need to do is add a Web reference to the exposed Web service.

.Net vs. J2EE

Despite what the marketers at Sun and Microsoft might want you to believe, .Net and Java 2 Platform Enterprise Edition (J2EE) are surprisingly similar. At a platform level, the two technologies are based on a virtual machine architecture aimed at portability.

The most significant difference between the two technologies is that, generally speaking, Java/J2EE is language-specific and platform-independent, while .Net is language-independent and platform-specific.

This doesn't apply in all cases because numerous J2EE implementations are not completely cross-platform. Microsoft has also made some overtures toward making .Net cross-platform, such as submitting the CLR and the C# language to the European Computer Manufacturers Association for public standardization.

Microsoft's .Net framework is based on its CLR, which is composed of a specification for Microsoft Intermediate Language code and a runtime environment that provides memory management (including automatic garbage collection), security and threading. Although this is analogous to the Java Virtual Machine architecture, the difference is that code targeted for the CLR can be written in

any language that supports the CLR's component model.

Visual Studio.Net comes with the Microsoft languages Visual Basic, Visual C++ and Visual C# (pronounced C sharp). C# is an object-oriented language that is a fundamental piece in Microsoft's new .Net strategy. C# builds on the syntax and object-oriented features of C++ and adds functionality to make it more Web services friendly.

Although C# is similar to Java, it is also different. Both languages share many of the same benefits, such as being fully object-oriented, but the languages diverge on features such as operator overloading and enumerations.

The .Net development framework can be subdivided into three parts:

- A CLR run-time engine.
- A set of extensive class libraries, written from the ground up, that comprise practically any functionality you could ask for.
- Two top-level development "arenas" for Web applications (ASP.Net) and regular Windows applications.

Thought leadership

Compared with .Net, J2EE has some catching up to do in XML thought leadership, because .Net is making it easy for developers to take advantage of XML in many innovative ways.

However, Sun is not far behind. Last December, Sun announced the Java API for XML, messaging and the Java API for XML data binding. And two weeks ago, Sun and Microsoft made major Web services announcements.

This competition is good for everyone. Microsoft is rebuilding its Web application environment to make it a peer to J2EE. And when .Net arrives, we'll have two capable development frameworks to choose from.

Microsoft has also pushed the envelope in terms of application services across the Web, and the company has put a new spin on portability with the language-independent CLR. These efforts have prodded Sun to expand its support for XML. The competition gives software architects considering new perspectives on enterprise development two attractive choices — .Net and J2EE, or maybe both, for some heterogeneous environments.

English is a research director of technology and architecture, global industries, at Unisys. He has worked with .Net since 1999. He can be reached at Art.English@unisys.com.

September 2001

The Top ISP Report

How is your dial-up ISP performing?

■ Is your ISP measuring up? Find out with our Top ISP Report, a joint venture between *Network World* and eTesting Labs' Internet BenchMark service (www.etestinglabs.com).

The data on the right is for September 2001; each month you can go online at Network World Fusion for the latest data.

The chart on the right shows the top dial-up ISPs in the market and how they performed in eight metrics, as determined by eTesting Labs' Internet BenchMark data.

We analyzed 21 ISPs (check out www.nwfusion.com, Doc-Finder: 6726 for the list); if your ISP isn't listed among the top performers, ask why it's not performing as well as its competitors.

Top ISPs profile, September 2001 *Network World* analysis

National retail

AT&T WorldNet • The strong remain strong. Blows all other ISPs out of the water.

Regional retail

BellSouth • Tops the charts in a dwindling field of regional ISPs.

Business-to-business

AT&T (GNS) • Strong performance across all metrics.

How we did it

Our data comes from eTesting Labs and its Internet BenchMark division. *Network World* takes the data and applies statistical analysis to rate the relative performance of each ISP's compared with the other ISPs within the same market classification (national, regional or business-to-business ISP).

Based on that analysis, we rank the top 10 ISPs for the month listed. The chart on the right lists the top three ISPs that performed best on average for the metric.

	National	Regional ISPs	B2B ISPs
Initial modem speed ■ Measurement of the negotiated connection speed to your ISP once the call has successfully gone through. Average for market:	AT&T EarthLink Broadwing 47.93K bit/sec	BellSouth Qwest Ameritech 47.77K bit/sec	AT&T (GNS) XO NaviPath 47.85K bit/sec
Average time to log on ■ Reflects the time taken to connect and authenticate to a provider network access server once the modem takes the line off-hook. Average for market:	AT&T EarthLink Verizon-West 29.4 seconds	Ameritech PacBell SBIS 31.79 seconds	AT&T (GNS) Genuity NaviPath 29.06 seconds
Average download time ■ The time taken for the Web page to download, including all page content. Calculated by measuring the time from the first HTTP TCP packet being sent to the server until the last HTTP TCP connection has terminated. Average for market:	AOL/AT&T (tie) EarthLink 25.63 seconds	Qwest PacBell BellSouth 26.53 seconds	XO AT&T (GNS) McLeod USA 26.11 seconds
Average DNS lookup ■ The time from sending the first DNS query until a response is received from any query. This reflects the end-user perception of the DNS resolution time, including retries. Average for market:	Prodigy AT&T Verizon-West 570.76 msec	Qwest Verizon-East SBIS 656.44 msec	AT&T (GNS) McLeod USA Genuity 543.58 msec
Average Web throughput ■ The effective transfer rate of the connection. The average of these Web throughput measurements is presented in the reports. Throughput does not necessarily reflect the bandwidth of the connection, but rather the effective Web throughput experienced using a connection. Average for market:	AT&T Broadwing EarthLink 4.86 byte/sec	Qwest PacBell 4.79 byte/sec	XO AT&T (GNS) McLeod USA 4.91 byte/sec
Evening-hour call failure rate ■ How often a modem call to the provider gets through successfully during the evening hours. A failure would include a busy signal, ring no answer, modem problem or logon failure. The lower the CFR, the better. Average for market:	Verizon-West Prodigy EarthLink 4.7%	Ameritech Verizon-East BellSouth 1.8%	NaviPath AT&T (GNS) McLeod USA 3.2%
Business-hour call failure rate ■ How often a modem call to the provider gets through successfully during weekday business hours. A failure would include a busy signal, ring no answer, modem problem or logon failure. The lower the CFR percentage, the better. Average for market:	AT&T MSN EarthLink 3.9%	Verizon-East Ameritech BellSouth 2.4%	AT&T (GNS)/ McLeodUSA (tie) Genuity 3%
Average total Web fail/timeout ■ Any error message that appears as a dialog box for the Internet Explorer browser is considered a Web page failure. Any download that takes longer than 4 minutes to complete is canceled and considered a Web page timeout. A low percentage is considered better. Average for market:	AT&T EarthLink MSN/Prodigy/Verizon-West .6%	BellSouth/PacBell/ SBIS (tie) .1%	NaviPath/AT&T (GNS) Genuity/WorldCom .4%

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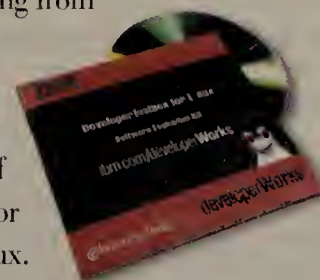
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Efficiency tool kit

The Information Technology Infrastructure Library set of best practices is gaining ground.

■ BY TOM DUFFY

Network executives looking to wring greater efficiencies out of their organizations are increasingly turning to an operational framework with a clunky name but which some say holds great promise — the Information Technology Infrastructure Library.

ITIL is a set of best practices for managing complex IT environments. Long in use in Great Britain, ITIL has slowly begun migrating to North America. Organizations as diverse as Procter & Gamble, Caterpillar and the government of Ontario are among the early adopters singing its praises.

"It has been an absolutely huge success," says Maria Ritchie, manager of service management for Ontario's Justice Enterprise in North Bay, Ontario. The government organization runs the Canadian province's courts and jails, among other critical agencies.

Ian Clayton, president of the IT Service Management Institute, describes ITIL as a roadmap for implementing and managing technology. "ITIL sets out major goals and directives for each of [10] different disciplines," Clayton says. "It speaks to activities that an organization should do in order to keep processes in control. It can also help determine whether a process is cost-effective." (See graphic, right).

Once a 40-volume set of principles developed by a former British government agency, ITIL has since been reduced to two volumes. Part of the attraction, followers say, is that it's available in the public domain. The books cost about \$95 to \$130 and are available at www.itilbooks.com. You can also get a variety of related publications at www.itSMF.net, the Web site of the IT Service Management Forum (itSMF).

The books address, among other things, change management, incident response and network configuration. Certification is available at "foundation" and "master" levels, and some early adopters say exposure to the standards through workshops and training can be highly effective.

The Ontario Justice Enterprise adopted ITIL two and a half years ago to help manage growth and to improve service to its internal customers. With 1,000 locations across the province and more than 25,000 users, the challenges of providing services efficiently were immense.

The ITIL initiative spawned a virtual service desk that slashed support costs by 40%. "It's a help desk but it's more than a help desk," Ritchie says. "It's service-level monitoring, service request processing and more. It makes sure the group is working together as a service-delivery chain." The entire Ontario government is now applying ITIL principles.

The Cincinnati consumer products giant Procter & Gamble has realized significant savings since embarking on ITIL three years ago, says Mike Ackerman, the company's associate director of IT. Procter & Gamble launched ITIL with a pilot project for help desks in China and has since taken it companywide.

The company implemented ITIL along with a tool kit standardization initiative aimed at reining in the number of applications that help desks have to support. Ackerman says a study of the savings within Procter & Gamble's finance and accounting IT departments shows a 6% to 8% cut in operating costs and a reduction in technology staff of between 15% and 20%. Once further rollouts of the initiative take place, he expects similar savings throughout the company.

The latest Procter & Gamble ITIL initiative focuses on problem management, which involves root-cause analysis of trends in help-desk requests. The initiative has resulted in a 40% reduction in help-desk calls. "We're doing basically the same amount of work with less people and providing better quality at the same time," Ackerman says.

Caterpillar reports similar results with its ITIL implementation. The Peoria, Ill., construction equipment and engine manufacturer began implementing ITIL 18 months ago

Elements of ITIL

The IT Infrastructure Library is a set of best practices for IT management. It encompasses 10 processes that fall into two groups: service support and service delivery.

SERVICE SUPPORT

Incident management: Aims to restore normal service operation as quickly as possible and minimize the adverse impact on business operations.

Problem management: Diagnoses the cause of the incidents identified by the service desk. Arranges for correcting errors in the IT infrastructure and performs proactive problem prevention.

Change management: Ensures that standardized methods and procedures are used for efficient and prompt handling of all changes. Minimizes the impact of change-related incidents on service quality.

Release management: Takes a holistic view of change and ensures that all aspects — technical and nontechnical — are considered together.

Configuration management: Provides a logical model of the infrastructure or a service by identifying, controlling, maintaining and verifying the configuration items in existence.

SERVICE DELIVERY

Availability management: Optimizes IT infrastructure capability, services and the supporting organization.

Capacity management: Lets an organization manage resources in times of crisis and predict the need for additional capacity in advance.

IT service continuity management: Maintains ability to provide a predetermined level of service following an interruption. Interruptions range from application or system failure to complete loss of system premises.

Service-level management: Maintains and improves IT service. The process is described by a constant cycle of agreeing on, monitoring and reporting IT service achievements, and instigating actions to eradicate poor service.

Financial management for IT services: Supports the organization in planning and executing its business objectives.

SOURCE: PINK ELEPHANT, INC.

and has already realized significant benefits, according to L.J. Sheets, a technical specialist with Caterpillar.

Addressing incident management for Web-related services, Caterpillar found that internal service providers were meeting the target response time of 30 minutes between 60% and 70% of the time. After applying ITIL principles, Sheets says the rate surpassed 90%.

The organization promoting ITIL, itSMF, boasts 8,000 members worldwide. In the U.S., there are about 600 members representing roughly 200 companies. "It has been the larger organizations that have been the early adopters in the U.S.," says Ken Hamilton, the co-founder and chairman of itSMF in the U.S. An itSMF-sponsored conference on ITIL scheduled for Dec. 6-7 is expected to draw more than 300 people to Orlando.

Like other standards initiatives, support from IT executives is critical. Procter & Gamble's Ackerman says one way to improve interest is to tie ITIL adoption to other company initiatives. Within Procter & Gamble, ITIL was marketed as a way to help meet a company-wide directive from the CEO to cut costs by \$2 billion over five years.

"As with most things, some people are very receptive and other people are like, 'I don't have time for this stuff,'" Ackerman says. "But if you can make it an enabler for a larger initiative it's like a knife through butter."

Duffy is a freelance writer in Haydenville, Mass. He can be reached at tomduffy62@aol.com.



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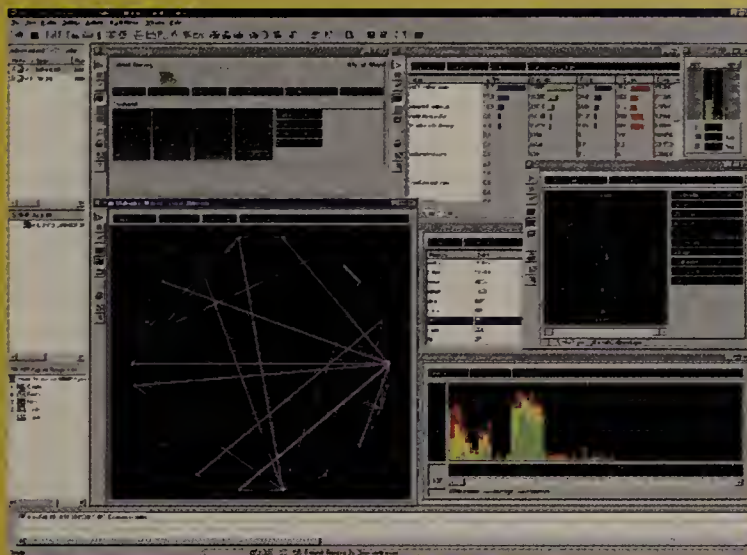


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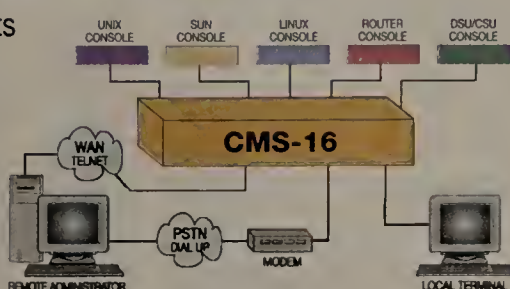
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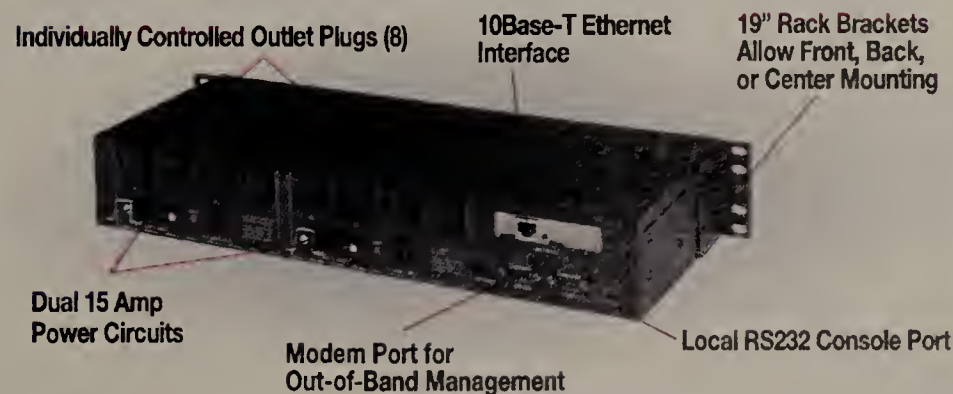


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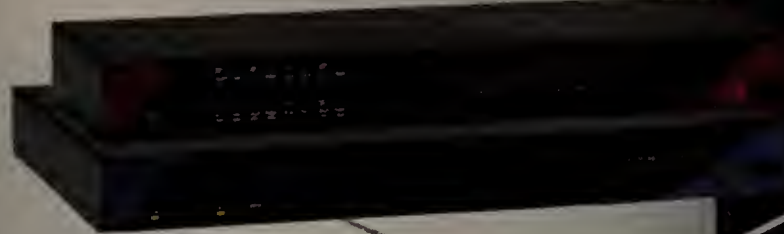
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 ♦ Database Administrators (Oracle, SQL Server)
 ♦ Web Based Development (Java or JavaScript, CORBA, Microsoft ASP, ActiveX, COM/DCOM)

Job opportunities are also available for Sales Managers, Marketing Managers, Business Managers, Human Resources Managers, Controllers and Technical Recruiters. Bachelor's or Master's degree required, depending on position. We also accept the foreign education equivalent of the degree or the degree equivalent in education and experience. Excellent benefits. Send confidential resume and salary requirements to: CyberTech Systems, Inc 1111 West 22nd Street, 8th Floor, Oak Brook, IL 60523 or 8 Neshaminy Interplex Suite 209, Trevose, PA 19053. EOE.

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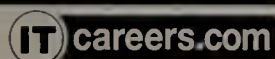
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IT Support Specialist sought by WI Value Added Reseller Co. to provide technical assistance, train'g, installat'ns, product demonstrat'ns to co. clients & Graphics Systems Corp (GXSC) employees situated in all offices; answer customer queries, coordinate w/ software vendors concern'g applicat'n software (I.E. Product Data Mngmnt solut'ns) offered & sold by the co.; aid in the select'n, evaluat'n/ implementat'n of software packages/hardware equipments, includ'g communicat'n/network equipmnt, to improve the business funct'ns & processes of the co.; troubleshoot, maintain, back up GXSC co. database info.; help coordinate the web page design content & layout of the co. Bachelor's Degree in Computer Science or comp. related field or equiv. to a credential's evaluat'n. Min. exp. 3 mos. in job or job-related. Travel req. Resumes to H.R. Dept. Graphics Systems Corporation, W133 N5138 Campbell Dr., Menomonee Falls, WI 53051. No calls. EOE.

Computer Programmer/Analyst pos in Troy. Dsgn, dvlp, test & implmt commercial & financial applics for SAP R3 acctg systm using ABAP/4 lang. BS in CIS, 2 yrs in pos or prgmr incl ABAP/4 prgmg for SAP R3 systm in commercial data processing. Fax resume (817) 861-4812.

SAP Business Information Warehouse (BW) company seeking experienced SAP BW functional/technical consultants familiar with generic and custom extractors, data modeling, info sources and info cubes. Also seeking SEM and Supply Chain Management/APO experience. Please e-mail resume to Business Information Solutions at recruiting@bisamerica.com or fax to (858) 458-5819.

Corliant, Inc. provides IT strategy consulting, systems integration and software development to clients nationwide. We have immediate, full-time opportunities for both entry-level and experienced professional in any of the following areas:

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- ▶ Network Engineers & Consultants
- ▶ Systems Engineers (MCSE)
- ▶ LAN/WAN Specialist (CISCO)

APPLICATION DEVELOPMENT

- ▶ Microsoft Certified Solution Developer (Visual Basic, Visual C++)
- ▶ Database Administrators (Oracle, SQL Server)
- ▶ Web Based Development (Java or JavaScript, CORBA, Microsoft ASP, ActiveX, COM/DCOM)

Job opportunities are also available for Sale Managers, Marketing Managers, Business Managers, Human Resources Managers, Controllers and Technical Recruiters. Bachelor's or Master's degree required, depending on position. We also accept the foreign education equivalent of the degree or the degree equivalent in education and experience. Excellent benefits. Send confidential resume and salary requirements to: Corliant, Inc., 8 Neshaminy Interplex, Suite 209, Trevose, PA 19053. An equal opportunity employer.

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SOFTWARE ENGINEER wanted

by computer consulting firm in Sugar Land, TX. Must have M.S. in Computer Science plus experience. Respond by resume to Ms. Barbara K. Nelson, A/A, Digital Consulting Software Services, Inc., One Sugar Creek Center Blvd., Suite 500, Sugar Land, TX 77478.

Programmer/Analyst-Determine feasibility/cost/time req'd for new/modified prog. for financial mgt & compatibility w/current sys; analyze/alter prog to increase operating efficiency; locate/solve errors. Bach/equiv Comp Sci or Engg. 6 mos exp in pos or Comp Engr. Fax resume 313-584-6133.

Database Design Analyst w/ Bachelors and 2 years exp. wanted in Houston, TX. Apply to: HR Dept., American Marvel, Inc., 5801 Memorial Dr., Houston, TX 77007.

Computer Application Specialists wanted in Dallas area to work under direct supervision to develop and design software systems for testing procedures and documentation. Provide installation, technical support & database security of LAN. Requires B.S in Comp. Sci. plus 1 yr exp. in job offered. Fax resume to Allison Gibson at LNS Environmental Services at (972) 669-3575.

Programmer Analyst. Convert customer requirements into program specifications; analyze the impact of proposed solutions on business applications; ensure satisfactory functioning through testing, analyze results and correct deficiencies according to customer requirements; and review the work done by development team members. Must have Bachelor's degree in Computer Science, Engineering or related, and knowledge of C, C++, UNIX, and Oracle. Send resume with cover letter to APAC Customer Services, Inc., Attn: Cindy Corkery, 6 Parkway North Center, Deerfield, IL 60015

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IT Careers in Consulting

Post-Y2K, new economy, new threats. The combination has created some of information technology consulting's most complex challenges. Testing and quality assurance become more important in containing costs. Companies look to automation and enterprise-wide solutions to drive down overhead. And in light of recent events, there's increased urgency around security and disaster recovery.

The Technology Group of **Spherion** offers a comprehensive suite of enterprise-class technology solutions to help clients solve critical business challenges, realize business value and leverage and retain current infrastructure, explains Jim Seery, area vice president for **Spherion** in New York City. The company provides consulting services to the financial services, healthcare, telecommunications, media, manufacturing and pharmaceutical industries.

With a 33-year history, **Spherion's** consultants have worked IT through some of the most dramatic changes in technology. "We bring that business intelligence and experience as part of our project engagements," Seery says.

For consultants, **Spherion** offers a strong emphasis on career development. "We do it smartly, by developing career paths that link directly to market demand," Seery explains. The company offers transferability across industries, types of projects and among its 20 U.S.-based Business Solutions Division offices.

Analysts International, based in Minneapolis, provides

staff augmentation and project/solutions business support to its clients, predominately Fortune 500 companies. With more than 3,500 consultants, about 80 percent of the business is staff augmentation for major customers. "Typically our consultants are assigned as individuals to a client team," explains Cathy Peterson, national accounts recruiting manager. The company seeks mainstream technical skills in client/server, mainframe and network environments. "The soft skills we look for include independent ability to work with clients and flexibility. Our customers want people who can address a variety of technical projects, not just one niche," Peterson adds.

"The company has been around for over three decades," she says.

"You'll be surrounded by people who have been with the company for 15 or 20 years. Our interest is in building that type of longevity with our consultants."

Covering the wide swathe of America from New Orleans west and north to Seattle, **Andersen Business**

Consulting's western region works with customers in industries ranging from energy to telecommunications, healthcare, financial markets, entertainment, retail and production. "We look for people with skills that can be applied with our clients today – business analytical skills, technology, change enablement," explains Dave Sparkman,

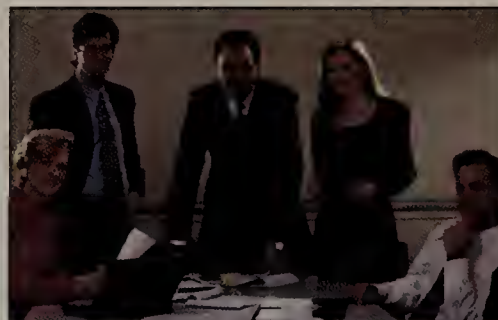
Andersen partner for human resources for the western region. "We focus on building long-lasting relationships with key accounts, providing them with integrated audit, tax and consulting services."

New college grads joining **Andersen** attend orientation classes at the St. Charles facility. "We simulate for them what projects are like, allowing them to learn fundamental skills

plus our Architected Solutions methodology that helps assure no stone goes unturned for our customers," Sparkman says.

More experienced individuals hired go through a course on **Andersen's** consulting approach. "Initially, our new hires are placed on a project team with a mentor to help get them grounded and get

some traction in this business," adds Sparkman. "This gives our consultants a strong foundation, while we continuously monitor and work with each person to make changes that meet career and personal needs."



For more job opportunities with consulting firms, turn to the pages of ITcareers.

- If you'd like to take part in an upcoming ITcareers feature, contact Jonis Crowley, 650.312.0607 or jonis_crowley@itcareers.net.
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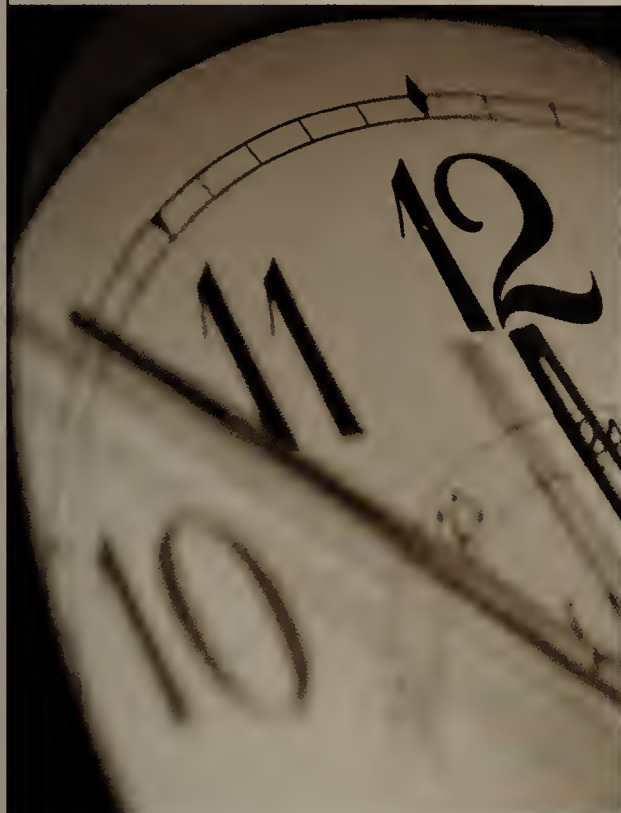
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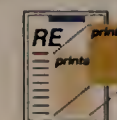
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*Indicates Regional Demographic

Cisco

continued from page 1

goes down, Cisco says. SRST was introduced in April in the Cisco Catalyst 4224 Access Gateway Switch for small and midsize branch offices.

Cisco also introduced its Emergency Responder — E911 Service software, which can track where an IP phone is located when a call is made and push that information to an emergency operator.

The product blitz brings the number of new enterprise IP telephony products and upgrades introduced by Cisco this year to more than 20.

This summer, the vendor also announced its largest voice-over-IP customer win: Dow Chemical's 50,000-seat order. This momentum has helped Cisco come on strong in the U.S. IP telephony market, as Cisco passed 3Com as the market leader last year.

It has since stretched its market share to 60% of IP PBX line shipments, according to Phillips Infotech.

However, some Cisco watchers remain critical of the paths the company has taken in developing its voice-over-IP strategy, citing the lack of a clear policy on the right voice-over-IP protocol to use. Other say Cisco mixes too much of its proprietary technology for some critical voice-over-IP features and controls.

"Cisco's IP telephony equipment, right now, is as good as any PBX system from an Avaya or Nortel," says Tim Kraskey, managing director Yankeetek, a Cambridge, Mass., venture incubator.

The problem, he says, is that "Cisco doesn't have a strategy that allows their enterprise and carrier networks groups to have one seamless set of baseline technology to let their IP voice systems work together."

Session Initiation Protocol (SIP) is the future of voice-over-IP technology, Kraskey says, because of its interoperable nature and slick integration with messaging and multimedia applications.

"[Cisco] has to say that SIP is the protocol to use for all call control. End of story. Not H.323 or Skinny," he adds.

Cisco CallManagers support the widely used H.323 protocol, but not SIP, and come preconfigured with a proprietary Cisco call control protocol called the Skinny Client Control Protocol (SCCP, or "Skinny"). Cisco phones support H.323, Media Gateway Control Protocol (MGCP) and Skinny, but only a few models support those and SIP.

"We are evaluating SIP for the enterprise," says Hank Lambert, Cisco's marketing director for enterprise IP telephony. "We're seeing that there is just not a huge demand for it on the enterprise side."

Cisco's service provider voice-over-IP business is a different story. Cisco supports SIP on a variety of service provider products, such as the AS5400 access server, the 7960 IP telephone and SIP Proxy Servers for carriers.

Cisco officials from the service provider business have said that SIP will let its voice-over-IP gear run applications such as conferencing, voice mail and integrated voice, e-mail and Web services better

Hardware/software VoIP push

Cisco is introducing a slew of enterprise IP telephony products. Highlights include:

Product name	What it does	Price
VG248 Voice Analog Gateway	Lets businesses with analog phones attach to a Cisco CallManager IP PBX.	\$12,000
Catalyst 4200	Gateway that lets remote locations tie into a CallManager and still use IPX or SNA routing protocols along with IP.	\$13,000
Emergency Responder-E911 Service	Server software locates a Cisco phone that has dialed 911.	\$6,000
Conference Connection	Server software for scheduling and managing conference calls with CallManager and IP phones.	\$21,000

than H.323, because SIP comes out of the Internet Engineering Task Force and resembles HTTP. H.323, Cisco says, is an ISDN videoconferencing protocol born out of the International Telephony Union that was retrofitted for voice over IP.

Another long-time Cisco watcher sees the use of proprietary technologies as potentially worrisome for users, but necessary for getting popular voice-over-IP products into users' hands.

"Cisco has legacy in proprietary technologies," says Frank Dzubeck, president of Communications Network Architects and a *Network World* columnist.

However, proprietary Cisco voice-over-IP technologies — such as Cisco products that can power IP phones over a network cable, or the use of the Cisco Discovery Protocol for its new E911 server — are sometimes necessary, Dzubeck says, to push the development of such technologies and to get products to market faster with the features users want.

Still, he adds "the mentality of someone buying IP products is 180 degrees away from [proprietary technology]." Dzubeck says that while Cisco voice-over-IP technology solves some issues that other vendors do not, "you have a lock-in situation . . . nobody wants to be 100% in the pocket of any one vendor."

One Cisco user sees the situation as less of an issue.

St. Paul, Minn., chemical manufacturer H.B. Fuller has used Cisco voice-over-IP products for the past several months. Kevin Wetzel, manager of global network services for the company, says he can wait for Cisco's IP telephony systems to become more standardized and interoperable, which he sees as an eventuality.

"That's one of the greatest benefits I can see in the future of IP telephony — moving toward

open standards," he says.

Meanwhile, the new products are drawing praise from Wetzel, as well as other users and analysts.

"I believe SRST is what has really helped Cisco's [voice-over-IP] products mature as an enterprise telephony solution," Wetzel says. Since SRST was introduced in April, Fuller has been rolling out Cisco voice-over-IP products to 20 branch locations, all linking back to a centralized CallManager cluster in the headquarters via T-1 lines.

While Wetzel has deployed Cisco 2600s and Catalyst 4225s with SRST, he is interested in the support a Cisco 7200 with SRST could provide in some of the company's larger remote sites. Fuller estimates it can save \$2 million during the next five years in system administration costs, long-distance charges and PBX upgrade costs by going with a centralized Cisco voice-over-IP system. The company has already saved \$52,000 at one newly built site by wiring the building only for data.

Among the other products Cisco announced are:

- VG-248 Voice Analog Gateway, which allows up to 48 analog voice or fax ports to a Cisco CallManager system.

- CallManager 3.2, which includes support for 10 new languages; station-to-station intercom; drop last conference party; and compatibility with Cisco Intrusion Detection System Host Sensor.

- IP Phone Expansion Module 7914, which provides 14 additional line appearances and speed-dial functionality on Cisco's IP Phone 7960.

- MGCP support for IOS, which lets Cisco 2600 and 3600 routers support forward, transfer, conference and hold features for attached MGCP-compatible IP phones.

- Catalyst 4224 SNA/IPX Access

Gateway Switch — provides routing and switching functions via a single, two-rack unit box now with support for IPX and IBM SNA protocols for remote offices.

With IP phone systems, it's the little things that can make the difference, The Burton Group's Passmore says, and Cisco's new products fill some of the nagging shortcomings users might have had with the products in the past. Passmore says products such as the 7914 expansion module, support for E911 and the ability to cheaply add analog phones are important to users.

"These are the kinds of things customers have asked for," he says. "Traditional PBX vendors have had a lot of these features for years."

Another user agrees.

"In the real world, there are advantages to go with IP, but there are also a lot little things like analog lines and fax machines that you just can't get rid of," says Steve Meyers, IT director for the city of Bend, Ore.

The city installed about 600 Cisco voice-over-IP phones in its police and fire departments at the beginning of the year, and plans to replace key telephone systems in all city buildings by year-end. Meyers says he could see savings in the \$10,000 range if he can still use the large number of analog phones located throughout the city's municipal buildings. ■

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BackSpin Mark Gibbs



Doing more with what you have

Let me start off by stating the obvious: The going is tough in the IT world — budgets are being pared down, staff is being let go, and business is stagnant or worse. But, might I be so bold as to suggest that this shake-up is long overdue?

The problem is that it has been too easy for too long. Just think of the wild abandon of IT a short while ago. If you were a dot-commie or your company was making any kind of push for e-commerce, it was pretty much carte blanche on IT expenditures. You needed a T-1 line? Here, have a T-3. Another Web server farm? No problem. A few more terabytes of storage? Buy four. Spend, spend, spend.

And now the grim realities of an economic downturn (or, dare I utter the dreaded word, "recession") has changed everything. Forget the 10% budget increase, how about a 10% decrease?

The response of many CIOs and IT execs to these cutbacks has been dismay or even outrage: "How can we be expected to maintain, let alone enhance, our IT infrastructure without money?" they cry.

Ladies and gentlemen, might I suggest that many of you have enough of everything already. You need to figure out exactly what you already have and make sure you are using it wisely. This is not doing

more with less, it is doing more with what you have.

If you look around your company I bet you'll find boatloads of useful hardware and software that is just lying there gathering dust. But that idle gear is nothing compared with the stuff still in circulation that you've lost track of.

So do a thorough survey. Once you've got a handle on what you actually have, analyze how and where it is being used. For example, why does that guy in admin have a 750-MHz PC with 500M bytes of RAM? All he's doing is word processing. Find him a slower machine that will do the job and repurpose his machine for that guy in engineering who needs a PC with some real horsepower. Voilà! You just saved a couple of thousand bucks.

And then there's disk storage. I bet you have users whining over not having enough storage. Try this: Survey what they have and how they use it, and look at how much storage is tied up with files that haven't been accessed for 30, 60 and 90 days. Then ask the users if they need these files. If they do, burn 'em onto CDs; if they don't, well ...

I would put good hard cash down on you having at least double the amount of storage you think you're short of currently wasted on old files that users claim they need.

Storage for corporate databases is a more thorny

issue. But this is also an opportunity to rethink how you conduct business. What is the value of your data and who owns that value? If you have a lot of data that has to be online for, say, legal or safety reasons despite the fact that no one's looked at it since the Last Supper, then you have a corporate-level issue.

But if there aren't legal or safety concerns, you can apply the same approach we discussed for the user storage problem. "Wait just a second" cries the head of customer service, "we can't just delete that data, we might need it, and we can't ask a customer to go on hold for an hour while it's recovered from tape!"

The answer to this angst is simple: We don't have the money Mr. CS, do you? You don't? Then let's talk about our business processes. IT will help you define what can be done with what we've got **BECAUSE WE DON'T HAVE A CHOICE.**

Finally, even if you are one of the lucky people whose budget isn't being negatively affected, this is a great opportunity to take a leadership role and become a corporate hero ("No, we don't need a budget increase, thank you very much, we are just frugal and wise with our resources. But we wouldn't mind, say, a bonus or even a salary increase ...")

Tell me how frugal you can be at nwcolumn@gibbs.com.



'NetBuzz The Latest on the Internet Industry

Paul McNamara

Want funding? ... Spend some time on the couch

No one will be shocked to see the headline from last week's third-quarter venture capital report by PricewaterhouseCoopers and VentureOne: Total dollars down 23% from the previous quarter; investment rounds down 16%.

The figures may be grim, but they still leave \$6.5 billion distributed over 601 rounds. That's a lot of

scratch, and the venture capitalists who dole it out on behalf of ever-optimistic investors would like to believe they have more than a wing and a prayer on which to pin their hopes.

They can — for a price — also have clinical psychology on their side, says Terry Williams, CEO of T. Williams Consulting (TWC), a management consulting firm in Collegeville, Pa. TWC recently teamed with the University of Pennsylvania Health System to begin offering venture capital firms a five-pronged service called Management Team Performance Assessments.

Venture capitalists will pay TWC \$7,500 to \$10,000 for this psychological profiling of would-be start-up management teams. The package includes a questionnaire to assess personality traits and leadership qualities; one-on-one interviews with a psychologist to gauge problem-solving abilities and business aptitudes; a group workshop to measure team dynamics; a background verification; and a report card on how the team stacks up.

Flunk and you might not get the dough.

"If you're going to invest \$5 million, you want to know — from a clinical point of view — the management team's probability of success," Williams says.

TWC is trying to put a scientific veneer on what has long been an art form ... and a suspect one at that.

But might this turn to psychology for help rub entrepreneurs the wrong way?

"It could," Williams acknowledges. "But who holds the cards? The entrepreneurs or the investors?"

The money guys have the idea guys over a barrel, all right.

"Look at the failure rate: 83% of all start-ups fail," Williams says. "If I have a \$200 million fund, I'd love to be in a position where I could increase those odds."

Because money is so tight, venture capitalists probably can get entrepreneurs to pretty much perform any trick they please.

When the money loosens up, though, you can be sure the best and the brightest will be less willing to jump through these hoops.

Yet another reason to skip Comdex

There must be more onerous assignments than covering the three-ring circus called Comdex ... but there can't be very many.

Next week's show in Las Vegas promises to be an extraspecial treat for the working press and paying attendees alike, thanks to security measures being imposed in response to ongoing threats of terrorism. Organizers are prohibiting anyone from carrying bags — including briefcases and backpacks — onto the show floor or into keynote venues. There won't even be a place to check these items.

Such restrictions — whatever prudent or not — are sure to rankle show-goers who already have to endure energy-sapping lines for buses, taxis and food.

So your choices are to buck up or stay home. ... Easy choice.

'Whopping' is in the eye of the beholder

According to new research from The Yankee Group, 93% of U.S. homes with a PC are also connected to the Internet, up 10% over the past year. A news story about the survey stuck the adjective "whopping" in front of 93%.

That misses the point.

The more remarkable take-away from this poll is that a whopping 7% have PCs that are not connected to anything more than an electrical outlet.

Presume a slice of that 7% can't afford Internet access. What's up with the others? A PC without Internet access is like a toaster without bread, no?

Guess they can't e-mail me with an explanation. The rest of you can write to buzz@nww.com.

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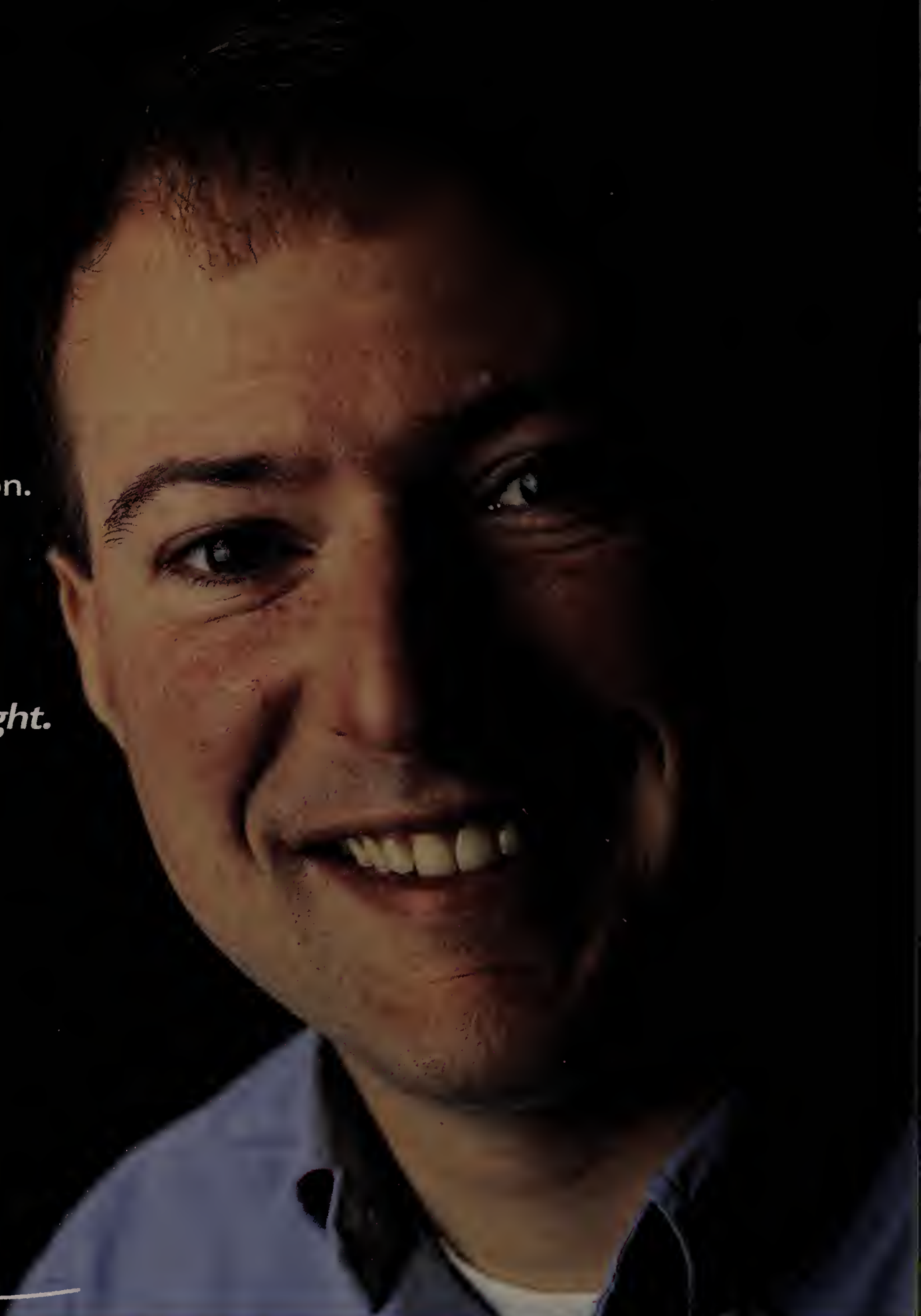
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